

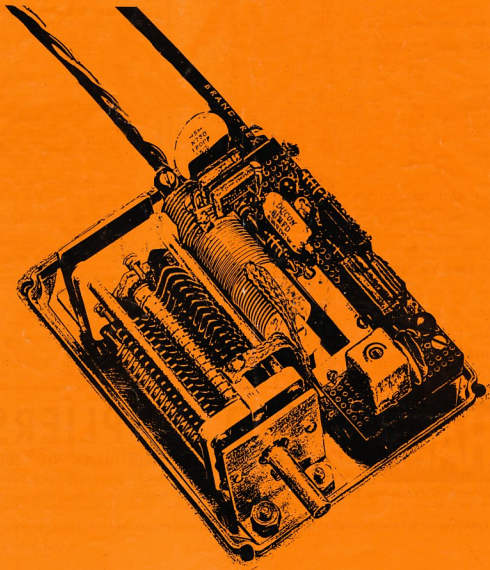
amateur radio

Vol. 38, No. 6

JUNE, 1970

Registered at G.P.O., Melbourne, for
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amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA. FOUNDED 1910



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COVER STORY

Our front cover this month depicts the VFO section of a Solid State SSB Amateur Receiver designed by Messrs. Tobin and Cliff of Fairchild. The receiver is the subject of an article which is currently being published in series form in "A.R."

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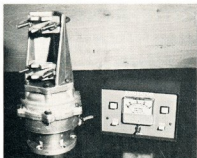
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FEDERAL COMMENT

Because we so often refer to our own Division as "The Institute" in order to draw a distinction between our Division and our Federal organisation, many of us sometimes refer to the Federal body as the "Federal Executive".

Recently I heard the President of a Division on a Sunday morning broadcast refer to the advantage that the "Federal Executive" would receive as a result of the transfer of the Institute's publication activities from a Victorian Divisional responsibility to a "Federal Executive" responsibility. Of course, he didn't really mean that the "Federal Executive" as such would receive any advantage at all. He meant that the Wireless Institute of Australia would receive an advantage, and this is merely another way of saying that all the Divisions would receive an advantage.

The Federal Executive is exactly what its name implies—it is "the Executive"—not some sort of club within a club. It is a group elected to carry out a defined task—in exactly the same way as at a Divisional level the Divisional Council is elected to carry out a defined task. A trivial point? We don't think so. It is a form of verbal shorthand that if used, often describes a fundamental truth. The Federal body is not the Executive, but all the Divisions banded together for their mutual benefit.

Another example of the same sort of "wrong labelling" that comes to my mind is that at times at Federal Con-

ventions a distinction has attempted to be drawn between "Executive" money and "Divisional" money. The only thing that is different is the source of the money; some coming from Executive activities such as the distribution of overseas publications (which one supposes is no more than a means of subsidising the Divisions) and some of it coming from Divisional per capita payments. If that is what the label means, then it is accurate. If it is taken to mean that some money is "ours" and some is "yours", then it is a misleading label. All the money is the Divisions'—and therefore it is all "yours" as a member of a Division.

We of the Executive do not wish to be thought of as some sort of rather exclusive and remote "club". We do not want to be faceless men. If we are, then we are failing in our task. If our Federal affairs are remote and intangible, then members can hardly be blamed for questioning the worth of the expenditure of part of their subscriptions on the expenses associated with our Federal body. If all the advantages are said to accrue to a small group of people in Melbourne, then an attitude that is at least questioning, can surely be justified.

No—the "Executive" does not get the benefit—the "Institute" does. We do not talk of "the Council" when we mean a Division. Let us say "Institute" when we mean our Federal organisation, and "Division" when we mean a Division.

M. J. Owen, VK3KI,
Federal President, W.I.A.

too complex for me and, no doubt, the cost would go up.

A few items in the circuit need some comment. The resistor (Rx) and diode (Dy) found their way into the circuit when initial attempts to count at 100,000 KHz. were unsuccessful—I take it that they act as pulse conditioners. The resistors in the base leads of the lamp-driver bases are shown as 47K, but this value will require adjustment according to the characteristics of the individual transistor. A value of 47K was found suitable for those 083 transistors with a β of 100, a higher value of β will call for a higher value of resistor. Selection of transistors with the help of a transistor tester is thus a worthwhile procedure.

Some time is required to juggle with some of these resistors and their associated transistors to arrive at a condition where the required lamp lights up and its partner glows only faintly. But with careful adjustment there is no ambiguity in the count. When pro-

The two 15K resistors in the leads to the bases of the 086 transistors are minis and are mounted underneath the board.

The costing has been arrived at as follows:

| | | |
|---|-------|---------------|
| 14 resistors at 7.5c each | | \$1.05 |
| 34 resistors (20 x 10K, 5 x 47K, 5 x 1K, 2 x 3.3K, and 2 x 8.2K) at 4c each | | 1.36 |
| 10 lamps | | 2.95 |
| | | \$5.36 |

Also to be bought are 1 x 680 pF. and 2 x 33 pF. capacitors and possibly two 300 ohm resistors and two mini 15K resistors, although these come on some boards. The diodes and the remaining capacitors and resistors come along with the transistors. Actually, the costing may be somewhat spurious; you buy the boards in selected batches of ten and you will end up with a lot of 680 ohm and other resistors and some

56 μ H. inductors and so on, as well as some 071, 034, 033 transistors, but these will, no doubt, find application in things like Schmitt trigger, gating and monostable circuits. An R-C bridge is useful for sorting out the capacitors which are colour-coded.

Then, too, you have to think about timing the duration of the count. There's a very handy device described by Weisburg (1968) in "Wireless World" which generates pulses at 100 KHz., 10 KHz., 1 KHz., 100 Hz. and 10 Hz. starting with a 100 KHz. crystal which I have found very useful.

Of course, you'll get caught in the long run. If you want to count megacycles you will have to pay more for the fast-counting stages, but you don't have to display these. This note was not written to present the ultimate in counters—it certainly is not that—but it was felt that the home-brewers and tinkers may be able to develop something which will be within the reach of most Amateurs. Thinking it over, I may be quite out of date—nowadays some Amateurs spend almost as much on their gear as I do on a new car.

Oh, what do you count? Do you remember when you discovered the grid dipper? You wondered how you had managed to get on without it. Apart from counting and frequency measurement, you can measure voltage, resistance, capacitance and so on. There are interesting things called unijunctions which come in handy. The counter becomes part of the equipment on the bench, even on the operating table.

Thanks are due to Dr. Bruce McMillan who provided the photographs.

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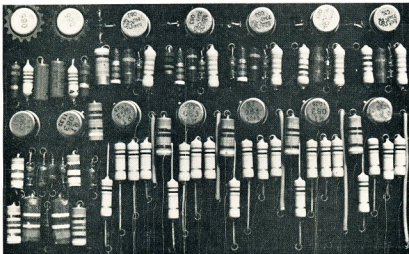


Fig. 2.—Decade Counter, 5 x 3 inches (photo 95 per cent. of size).

perly adjusted the read-out lamps are by no means lit to full brilliance. At a slow counting rate the partner of the lamp indicating at the time will be seen to glow faintly, the others do not.

The lamps are rated at 6 volts at 20 mA. Type T5GS printed circuit liliput telephone filament lamps (available from E. S. Rubin & Co. Pty. Ltd.), and are mounted in a row 0-9 on a separate board measuring 5" x 3", together with the two 300 ohm resistors (Fig. 3). The life expectancy of these lamps is longer than an Amateur should spend on his hobby. The odd-even switching transistors are Type 086 with cog-wheel heat-sinks which come with them on the computer boards. They run slightly warm to the touch but will get hot if the lamps are too bright. The leads between lamps and transistors are anchored to both boards. If you don't do this, you'll lose some transistor pins. Each decade complete with its lamps draws about 125 mA. at a regulated 12 volts.

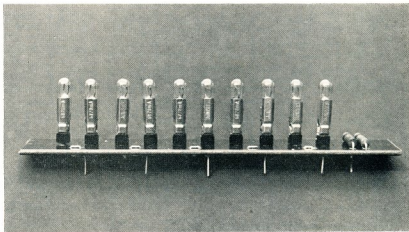


Fig. 3.—Lamps which indicate counts of 0-9 mounted on a separate board.

A SOLID STATE AMATEUR S.S.B. RECEIVER

PART THREE

B. G. CLIFT and A. E. TOBIN*

This article describes the design concepts, circuit operation and construction of the variable frequency oscillator covering the nominal range of 5 to 5.5 MHz. This provides the basic tuning function for the receiver on all bands of operation.

The fundamental problem with the design of any communications equipment covering a specified variable frequency range is that of frequency stability. Since the v.f.o. is the major contributing factor to the stability criteria of this receiver, the design of this section is extremely important and we must emphasise that care be taken in the construction and adherence to the circuit details which follow. Since single sideband reception is the major objective, it is desirable that the v.f.o. stability approach that of a crystal oscillator. This is only achieved by firstly taking all standard precautions and then carefully selecting suitable temperature compensating components.

In any linear oscillator where stability is important, two main design objectives must be realised. Firstly, we must isolate as much as possible the frequency determining components from the active device. This is enhanced by keeping the impedances around the transistor low compared to the dynamic impedance of the tank circuit. Secondly, we must provide a low impedance take off point so that loading the oscillator will have negligible effect on the frequency. Often this is difficult to achieve both a low output impedance and a usable output level, so the use of an isolation or buffer amplifier is required.

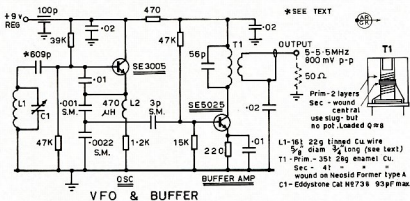
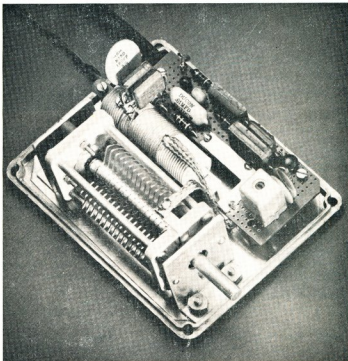
CIRCUIT DESCRIPTION

The circuit configuration used is that of a Colpitts Oscillator. This was chosen because it is relatively simple to provide low impedance terminations for the active device. Hence the effects of device impedance variations with temperature and supply voltage are kept to a minimum. The transistor used

In this position is an SE3005, which is a relatively new device to the Australian market and offers slight advantages over the SE3001 or SE3002. It has a higher f_T , a lower feedback capacitance and also guarantees a differential collector to base capacitance of 0.15 pF. maximum (at 1 MHz., V_{CE} to 10v.).

However, either device may be used to achieve the same order of stability.

Temperature compensation is provided with the coupling capacitor between the tank circuit and the base of the SE3005. The actual value used here is about 609 pF, and is made up of 390 pF, silver mica, 39 pF, silver



mica, and 180 pF. N750 disc ceramic. The 0.01 μ F. between base and emitter is a Ducon mylar type DMA612. The other two capacitors in the oscillator with exception of rail by-pass and tuning capacitor are silver mica. The 0.0022 μ F. is the low impedance take off point for the buffer amplifier and can, in fact, be larger, provided the summed capacitance of the 0.001 and 0.0022 μ F. remains approximately constant.

The buffer amplifier stage uses an SE5025 and is very lightly coupled to the oscillator via a 3 pF. silver mica. It has a tuned collector which provides some reduction in harmonic content and allows a low impedance coupling to a terminated 50 ohm co-axial cable. The 50 ohm termination is important so

that the Q of the tuned circuit is reduced from 35 to approximately 8. The output level variation over the tuning range is approximately 10 per cent. and should be of no real concern.

It is important that the oscillator operate directly from the +9 volt regulated rail and not from a zener regulated supply. This is because the uA723 used in the power supply has a very good temperature stabilised reference—to use a zener would only result in the deterioration of the rail regulation because of temperature variations.

The v.f.o. is entirely housed in a 4½" x 3½" x 2" Eddystone die-cast box. All components are mounted directly onto the lid of the box to enable easy access to circuitry. A solderable ground plane was formed by simply placing a sheet of brass on the lid before mounting the components.

Angle brackets were made up for the gang so that it could be mounted with the shaft approximately central to the depth of the box. The brackets are isolated electrically from the frame of the gang by ¼" tapped plastic stand-offs.

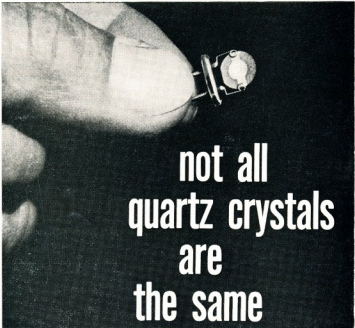
The coil was wound on a piece of grooved ceramic former from the normal radiator element. This was mounted on ¼" standoffs via polystyrene plugs which were inserted into each end of the former. This method is fairly clumsy and an alternative method may be found. However, the method used does provide adequate mechanical rigidity which is the most important consideration. The coil should be mounted as closely as possible to the centre, but no less than ½" from the sides of the box, otherwise the Q will be seriously affected.

Other components of the circuit are mounted on a piece of matrix board which is again held via three stand-offs from the box lid. All ground connections are made via one braided earth strap from the gang centre shaft to one point on the lid ground plane. A brass earth strap is also used on the matrix board to provide effective earthing of circuit components (see photograph).

PERFORMANCE

- 1.—Supply: +9 volts regulated.
- 2.—Frequency range: 4.970-5.530 MHz. (30 KHz. overlap).
- 3.—Output level: 800 mW. p.p. ±5% into 50 ohms.
- 4.—Temperature stability: —64 cycles with 20°C. change in ambient (approx. 1 part in 10⁶).
- 5.—Warm up: negligible.
- 6.—Output isolation: +80 cycles from 50 ohm termination to S/C (cable length 24").
- 7.—Supply rejection: 22.4 cycles per 100 mV. change in rail voltage.

Note.—The mixers and crystal oscillators will now be discussed in Part 4. These were previously promised for Part 3.



Today's sophisticated communications equipment calls for crystals that meet the most exacting standards of the art.

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HQ61

THE WORLD WITH A TRIANGLE

PART THREE

WAL SALMON,* VK2SA

[Part One appeared in "Amateur Radio, October, 1968; Part Two, April, 1969.—Ed.]

How many have tried to get directivity and gain from an antenna on 40 metres? If we decide to use a simple dipole the answer is orientation to get whatever we can in the desired direction. If we prefer a vertical, all that is left to do is to concentrate on lowering the radiation angle which is no mean feat in the majority of cases.

In the latter part of 1968 the author took a look at the facilities available for the construction of a two element directional antenna for 40 metres. If you are interested in the installation of a high tower and the purchase of a commercial 40 metre beam, don't read any more of this article.



The Author, VK2SA.

The reader might now refer to the triangular configuration Fig. 1 of April 1969 "Amateur Radio" (page 10). It will be seen that there is space available between the two 20 metre quads for the installation of an additional antenna. Thought was then given to the construction of a two element fixed array for 40 metres and it was decided to experiment with two driven loops with a phasing section to permit reversal of direction. Two loops were constructed, the top and bottom sections being 35 feet, and the vertical sections 30 feet, and when hoisted in the air the average distance apart of the horizontal top sections was approximately one-quarter wave. The bottom sections of the loops are brought closer together than one-quarter wave for convenience in feeding the array and are 12 feet from ground.

Consideration was then given to the method of feeding the loops and it was decided to use the same system as adopted for the 20 metre quads, namely, tapped loading coils and 300 ohm open t.v. line. Two coils of 23 turns wound on 1½" plastic tubing and tapped at 10 turns were constructed and inserted in

the southern corner of each loop. A g.d.o. check indicated a resonance of approximately 7.6 MHz. in each loop. Small tuning condensers were then mounted in metal waterproof boxes and mounted on wooden supports below the loading coils in each loop and both loops were then tuned to 7 MHz.

A phasing delay stub consisting of 34 feet of open wire 300 ohm t.v. line was then constructed by winding the t.v. line over a flat masonite board 2 feet by 15 inches. The stub was then mounted on the wall of a fibrolite shed

(continued on page 15)

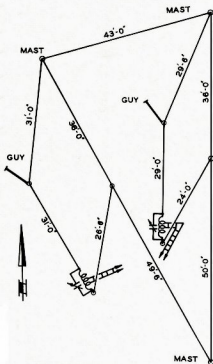
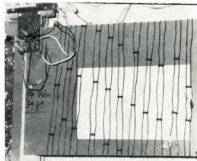


Fig. 1.—VK2SA's 40 Metre Loops.



Loop delay stub, 34 feet.



Loop tuning box and coil, 12 ft. from ground.

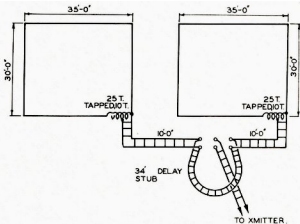


Fig. 2.—VK2SA's 40 Metre Driven Loops.

Note.—Drawing shows incorrect number of turns on coils. Coils should be made of 23 turns, tapped at 10 turns.

* 77 Flora Street, Kirrawee, N.S.W., 2232.

VISIT TO POINT HICKS

Thirteen members of the Victorian Division made the 310-mile trip from Melbourne to place the first part of the Australian coast sighted by Captain Cook on the Amateur bands as a part of the Captain Cook Bicentenary celebrations.

All bands from 1.8 MHz. to 432 MHz. were operative at some time over the 18th to 20th April, something approach-

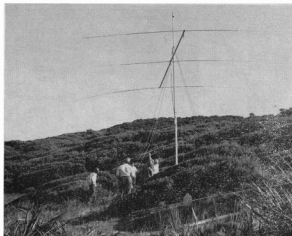
the same city, so that our host was able to talk back there. He showed plenty of interest in that QSO as well as other contacts.

Those who made the trip enjoyed the formal ceremony, and the start of the yacht race to Botany Bay, and would like to thank all those who gave us contacts as this was what the expedition was about. We were pleased to

obtain a couple of contacts from Whitty, in Yorkshire, as this was the home port of the collier which was to become famous as H.M. Bark Endeavour.

QSL and certificates will be forwarded to all stations who contacted AX-3AW1/Portable at Point Hicks.

We certainly hope we will have the opportunity to work you all again from our home QTHs.



ing 1,000 QSOs resulted. As one would expect, almost all of these were on the h.f. bands. Ideal conditions existed for both radio and weather.

Good results were obtained from all h.f. equipment. 1.8 MHz. and 14 MHz. were located on a site in view of the lighthouse, and the pressure on 14 MHz. was so great at times that the operators had to leave off for a while to let the QRM settle.

Although only six watts r.f. was available for 1.8 MHz., AX2, AX3 and AX5 stations were worked.

3.5 and 7 MHz. site was on the eastern side of the Cape and splendid results were obtained at all times. The 40 metre call-back after the broadcast was taken from here and went for over an hour.

It was attractive enough for a local in the form of a snake to pay us a visit at this stage and the tent was quickly vacated by personnel, but despite a thorough search he managed to get away.

Despite the inverted vee antenna, a G was worked on sideband on this band as well as other DX on 7 MHz.

21/28 MHz.: A beam was used on 21 MHz. and a whip for 28 MHz., and again good results. The site was actually on the beach on the eastern side.

V.h.f. was at the 14 MHz. site, but only limited results were obtained, mainly with the Swinburne College Radio Club who were active from National Parks in the area.

We were welcome by the lighthouse keeper who hailed from Belfast and we were able to raise a GI from

SOLID STATE EXPENSIVE?

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I.C. F.M. I.F. AMPLIFIER and DEMODULATOR KIT—see "A.R." June 1970. **Frequency:** 455 KHz. (nom.); **Sensitivity:** 12 μ V. for 10 dB S/N (dev. 5 KHz., f. mod. 1 KHz.), 40 μ V. for hard limiting. **Recovered Audio:** 100 mV. average for hard limiting; **Supply Voltage:** 8V. to 15V. d.c., positive or negative earth; **Bandwidth:** 16 KHz. with optional ceramic filter or determined by external filters; **Dimensions:** 4 cm. x 8 cm. fibre glass P.C. board. Complete kit less filter: \$9.80; Wired and tested: \$12.80. **Ceramic Filter CFP455E:** \$16.00.

I.C. ONE-WATT AUDIO AMPLIFIER KIT—see "A.R." July 1970. **Power output:** 1W R.M.S. into 8 ohms; **Sensitivity:** Adjustable from 14 mV. to 200 mV. R.M.S. for full output; **Frequency Response:** 160 Hz.-4.5 KHz. or 160 Hz.-13 KHz.; **Design Supply Voltage:** 12V. D.C. (positive or negative earth); **Operating Voltage Range:** 6-13.5V. D.C.; **Input Impedance:** 8-35K ohm; **Dimensions:** 4 cm x 8 cm fibre glass P.C. board. Complete kit (less speaker): \$8.40; Wired and tested: \$11.40.

144 MHz. to 432 MHz. VARACTOR TRIPLER KIT—**Input:** up to 40W. at 144 MHz. **Output:** up to 30W. at 432 MHz., depending on diode used; **Size:** rectangular box 11 x 7.5 x 3.2 cm. when assembled. Complete kit including metalwork bent and cut to size and ready for soldering, excluding diode: \$5.80. 2N3632 transistor (unbranded) will give 13.5 W. output when used as an amplifier on 144 MHz. or 10W. output at 33% efficiency when used as a varactor tripler from 144 MHz. to 432 MHz.: \$7.00.

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An Integrated Circuit F.M. I.F. Strip

J. REYNOLDS,* VK3ZMU

The f.m. i.f. strip described was designed as an add-on unit to enable reception of frequency modulated signals on existing receivers without this facility as standard

THE last few years have seen a remarkable growth in the popularity of f.m. on the v.h.f. and u.h.f. bands. While this is largely due to the ready availability of commercial transceivers suitable for Amateur conversion, a realisation of the technical and practical advantages has also contributed.

While f.m. can be better than a.m. or s.s.b. above a certain threshold input signal-to-noise ratio, it is doubtful if this is a real advantage for Amateur purposes since we are generally more concerned with receiving weak signals than achieving a very high recovered signal-to-noise ratio. Potential for noise

Amplitude modulated systems such as s.s.b. and double sideband a.m. impose stringent requirements on system linearity. Complex gain control circuits are necessary to prevent overmodulation or intermodulation splatter due to the wide range of signal strengths encountered.

These requirements do not exist for a frequency modulation system. Indeed best performance is achieved if the signals are hard limited, resulting in constant amplitude signals from the limiters. Interference is less troublesome since the stronger signal prevails for a difference in signal strengths of greater than about 3 dB.



AUSTRALIS-OSCAR 6 SATELLITE

One of the best reasons for being able to receive f.m. is the future launch of Australis-Oscar 6. This is expected to be a hard limiting multi-channel f.m. repeater system. If all goes as planned the satellite will allow international Amateur communication on the v.h.f.-u.h.f. bands.

THE CIRCUIT

The circuit diagram (Fig. 1) shows a source follower (MPF102) followed by a high gain i.f. amplifier and f.m. discriminator. The high gain amplifier and discriminator are contained in the one integrated circuit, an AWM1306.

Signal input, taken from a suitable point after the mixer, is coupled to the gate of the source follower via a 0.02 μ F. ceramic capacitor. The high value gate resistor (470K ohm) ensures that the f.m. i.f. strip does not disturb the normal operation of the receiver by detuning or damping tuned circuits.

The source resistor of the source follower stage is such as to give an output impedance of about 1.5K ohm, a suitable value for matching into the following filter or integrated circuit (see later).

The circuit of the IC is given in Fig. 2. The AWM1306, made in Australia by A.W.A., is by far the best amplifier-discriminator available today. Reference to Fig. 2 shows that the

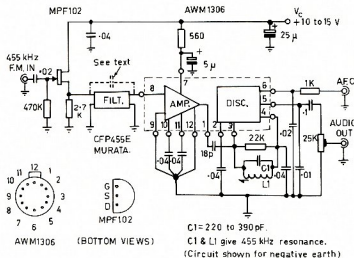


FIG. 1—F.M. IF-AMPLIFIER & DEMODULATOR CIRCUIT.

and interference improvement is a definite advantage but the practical advantages are probably more important. These include being able to run transistors and valves at their maximum ratings and being able to multiply to harmonically related bands without distortion. Only simple modulators are required, reducing the cost of equipment.

F.m. is by far the most suitable mode for use with active repeaters and translators. Repeaters demodulate the received signal to baseband and remodulate the transmitter with this demodulated signal. Translators use a heterodyne or multiplier system to change frequency between input and output.

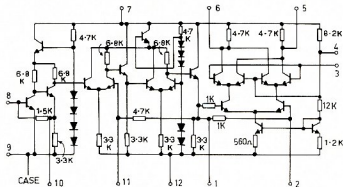


FIG.2 - SCHEMATIC OF AWM1306

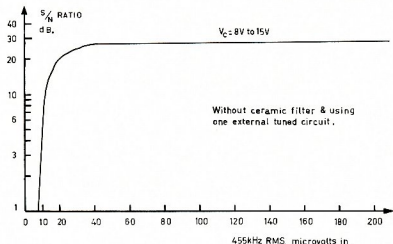


FIG. 3—F.M. IF-AMPLIFIER & DEMODULATOR CHARACTERISTICS (SIGNAL)

AWM1306 consists of a cascade of two common emitter stages followed by a differential amplifier, emitter follower, differential amplifier and second emitter follower. I.f. output is taken via lead 1 from the emitter follower stage to lead 3, the input of the discriminator section. Push-pull audio output is taken from pins 5 and 6 or single ended output from either. L1/C1 is a normal i.f.t. resonant at the i.f. frequency. The 22K ohm resistor across L1/C1 broadens the frequency response of the discriminator.

Audio output of approximately 100 mW. r.m.s. is coupled via a 0.1 μ F. capacitor to the 25K ohm potentiometer. If required, this pot. may be used to set the level of output of the f.m. demodulator so that it is equal to that from other detectors in the receiver.

FILTERS

Provision has been made on the circuit board for a Murata ceramic

block filter, type CFP455E. These filters provide a 6 dB. bandwidth of 16 KHz. and a shape factor of 2 (6/50 dB.). An i.f. bandwidth of 16 KHz. is adequate for most f.m. transmissions.

If it is desired to use the existing filter circuitry of a receiver the ceramic filter may be replaced by a 0.02 μ F. capacitor. Fig. 5 shows the possible connecting points in a typical receiver. Point A should be used with the ceramic filter or when maximum bandwidth is required. Points B, C and D can be used depending on the degree of selectivity required.

The bandwidth of a narrow band f.m. signal is equal to that of an a.m. signal, so that existing filters in an a.m. receiver are suitable. However for wideband f.m. it will be

difficult to achieve the necessary compromise between bandwidth and interference rejection. It is for this application that the ceramic block filter was developed.

When used with valve receivers it is essential that any coupling to a valve anode be via a 33K ohm resistor. This is necessary to prevent capacitor charging current destroying the field effect transistor. If the 0.02 μ F. 50v. coupling capacitor specified in Fig. 1 is used an additional capacitor of no more than 0.002 μ F. and of adequate voltage rating must be used in series. This is to reduce the d.c. voltage across the 0.02 μ F. capacitor to below its voltage rating.

CONSTRUCTION

The i.f. strip is constructed on a 4 cm. x 8 cm. fibre glass printed circuit board containing the whole of circuit 1 including filter. Connections to the board are made via small pins. Provision has been made for either positive or negative earth as determined by two straps. D.c. output may be taken from pin 8 for automatic frequency control or reception of f.s.k. signals.

PERFORMANCE

Fig. 3 shows the variation of output signal-to-noise ratio with input voltage at the gate of the FET. Fig. 4 shows the variation of audio output with input voltage for various supply voltages.

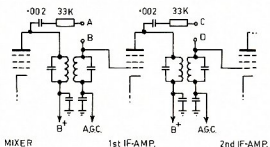


FIG. 5—TYPICAL CONNECTION POINTS

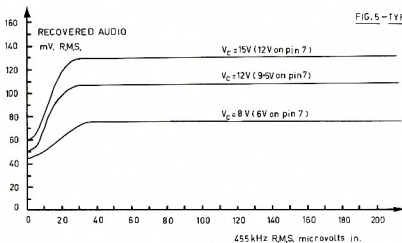


FIG. 4—F.M. IF-AMPLIFIER & DEMODULATOR CHARACTERISTICS (AUDIO)

Typical performance figures are:

- Nominal operating voltage: 12v.
- Sensitivity (f = 455 KHz., dev. = 5 KHz., f_m = 1 KHz.): 12 μ V. for 10 dB. S/N.
- Full limiting: 40 μ V.
- Audio output at full limiting: 105 mV.
- Audio distortion: (400 μ V. input) 3%.
- (10 mV. input) 2.5%.
- Operating voltage range: 8-15v.
- Useful frequency range: up to 2 MHz.

ALIGNMENT

Adjust L1 for best audio quality or for zero volts d.c. between leads 5 and 6 with a strong signal at the desired frequency applied. Set the output level potentiometer as required.

On the Concentration of Ferric Chloride

Information for Etching Printed Circuit Boards

MORTON P. DAVIS,* VK3ANG

The following information is presented for the benefit of the increasing number of Amateurs who are etching their own printed circuit boards using ferric chloride.

A table is given, showing the basic data, and examples of the necessary calculations are provided.

| 1 | 2 | 3 | 4 |
|--------------------|--------------------|--------|----------------|
| A% by weight | H% by weight | S.G. | W gm./litre |
| 20.00 | 33.33 | 1.1838 | 52.9 |
| 22.00 | 36.66 | 1.2043 | 60.5 |
| 24.00 | 39.99 | 1.2254 | 68.6 |
| 26.00 | 43.33 | 1.2473 | 76.9 |
| 28.00 | 46.66 | 1.2699 | 85.5 |
| 30.00 | 49.99 | 1.2934 | 94.5 |
| 32.00 | 53.32 | 1.3176 | 103.8 |
| 34.00 | 56.66 | 1.3426 | 113.7 |
| 36.00 | 59.99 | 1.3681 | 124.2 |
| 38.00 | 63.32 | 1.3941 | 135.4 |
| 40.00 | 66.66 | 1.4200 | 147.7 |

A% = Anhydrous compound weight e.g. grams solute per 100 grams of solution.

H% = hydrated compound weight per cent.

S.G. = specific gravity of solution at 20°C.

W = water displaced by anhydrous solute, grams/litre.

1 lb. = 453.6 gm.

1 litre = 1.76 pints.

Example of Calculations for Hydrated Ferric Chloride (Fe Cl₃ · 6H₂O).

Required S.G. = 1.38.

By linear interpolation in columns 2 and 3, an S.G. of 1.38 requires a value of H% = 61.51%.

The weight of 1 litre of solution of S.G. = 1.38 is 1380 gm.

61.51% of 1380 gm. = 850 gm.

Therefore, take 850 gm. of hydrated ferric chloride and make up to 1 litre,

or 500 gm. made up to 588 ml.

or 500 gm. made up to 1.03 pints.

Example of Calculations for Anhydrous Ferric Chloride (Fe Cl₃).

Required S.G. = 1.38.

(a) By linear interpolation in columns 1 and 3, an S.G. of 1.38 requires a value of A% = 36.92%.

The weight of 1 litre of solution of S.G. = 1.38 is 1380 gm.

36.92% of 1380 gm. = 509 gm.

Therefore, take 509 gm. of anhydrous ferric chloride and make up to 1 litre,

or 500 gm. made up to 982 ml.

(b) By using the values of W in column 4 we can now calculate how much water must be added to any weight of solute to produce the required specific gravity.

By linear interpolation in columns 1, 3 and 4, an S.G. of 1.38 requires a value of A% = 36.92%, as above, which leads to a value for W = 129.4 gm./litre.

Therefore, to produce 1 litre of solution of S.G. = 1.38, take 509 gm. of anhydrous ferric chloride and add 870.6 ml. of water, or to 500 gm. add 855 ml. of water. This is approximately 1 lb. of anhydrous ferric chloride added to 1½ pints of water.

The range of specific gravity of solution suitable for efficient etching is 1.32 to 1.40, with an optimum value of 1.38, and if heated, the temperature should not exceed 130°F.

I acknowledge the assistance given by Mr. W. Mare, of the Cancer Institute, Melbourne.

★

ELNA CAPACITORS

Reduced prices have been announced covering a wide range of Elna electrolytic capacitors. Distributed in Australia solely by Soanar Electronics Pty. Ltd., the Elna range includes "Green-cap" and "Ceramic" capacitors, brochures for which are available on request from Soanar head office, 30-32 Lexton Rd., Box Hill, Vic., 3128.

TECHNICAL ARTICLES

Readers are requested to submit articles for publication in "A.R." in particular constructional articles, photographs of stations and gear, together with articles suitable for beginners, are required.

Manuscripts should preferably be typewritten but if handwritten please double space the writing. Drawings will be done by "A.R." staff.

Photographs will be returned if the sender's name and address is shown on the back of each photograph submitted.

Please address all articles to:

EDITOR "A.R."
P.O. BOX 36,
EAST MELBOURNE,
VICTORIA, 3002

WORLD WITH A TRIANGLE

(continued from page 11)

midway between the two loop coils. A double throw double pole switch was installed in the shed and two ten foot 300 ohm feed lines installed to connect the loop coils to the phasing stub. Sixty feet of 300 ohm open wire line from the centre contacts of the d.p.d.t. switch to the shack transmitter completed the installation.

A point which I emphasise is the method of tuning the two loops which must not be checked by the g.d.o. with any feed line connected to the loop loading coils.

With regards to results, on 40 metres, I have made a record in the log of all comments regarding my signal, both on c.w. and s.s.b., and remarks like "You are the best signal on the band at present" and "Your signals are the best ever from 2SA" are common. Tests have been carried out with the United States and VK6 and VK5, and reports of 2 S units change on reversal of the phasing switch have been frequent. A report of 589 on c.w. was given by HP1E and SSB7 from H33AL.

If you decide to try the antenna and put it up higher than mine, the results should be fantastic.

FEEDBACK

Re the article "A Hub or Tri-band Spider Quads," "A.R." March 1970, p. 12-15. One point that was not made clear in this article is that "Spider Quads" must be "boxed" to increase the rigidity of the structure and to make it look as elegant as possible.

Boxing is achieved by connecting a number of the points, at which the loops are connected to the spreaders, together by means of non-conducting line such as 100 lb. breaking strain nylon fishing line, or a suitable woven line. These lines should run horizontally between the tie points and if the loops are attached directly to the spreaders will be identical to the desired spacing.—VK3ASC.

★

BAIL ELECTRONIC SERVICES S.A. AGENT

Yaesu sole agent in Australia, Bail Electronic Services, have appointed Farmers Radio Pty. Ltd., 257 Angus St., Adelaide, as their S.A. representative; telephone 23-1268. Max Farmer (VK5GF) was one of the earliest manufacturers of two-way radio in South Australia, and has developed special p.a. equipment for use in tourist buses. Farmers' appointment, coupled with N.S.W. rep. Sandy Bruce-Smith, now gives three-State coverage for Bail Electronic Services.

EDDYSTONE BROCHURES

Technical brochures with full specifications of the range of Eddystone v.h.f.-u.h.f. communications receivers are now available from the sole Australian agent: R. H. Cunningham Pty. Ltd., 608 Collins St., Melbourne, 3000.

* 144 Tramway Pde., Beaumaris, Vic., 3193.

VK-ZL-OCEANIA DX CONTEST, 1969 RESULTS

Our thanks to all who helped make this part of the Cook Bicentenary Celebrations the success it was. Everyone who submitted a log will receive a memento. Certificate and trophy winners will receive their awards direct while others will receive a "Participation Card" via QSL Bureaux.

While the greatest number ever of logs was received, more were expected from North America and Europe. It is disappointing that in spite of special direct publicity to DX Clubs, not one entry for this section was received. A reasonable critical comment in overseas logs was "Where were the ZL4 stations?"

While there are numerous exceptions, in general the easiest logs to check came from Japan with U.S.S.R. as runner-up. Many logs had to be re-scored as results will show but in general, logs were good.

In these results you will find the calls of many of the world's premier contest operators as prize winners, but the awards were structured in an endeavour to make provision for everyone. I hope we have been able to strike a balance to the satisfaction of all.

—Jock ZL2GX.

AUSTRALIA

| Call Sign | C.W. Section | | | | | Total |
|-----------|--------------|------|-------|------|-------|-------|
| | 30 | 40 | 20 | 15 | 10 | |
| VK1GID | — | 875 | 3455 | 1600 | — | 5930 |
| VK2APK | 155 | 1760 | 8565 | 7115 | 4405 | 22000 |
| VK2E0 | 320 | 1450 | 4410 | 5950 | 5045 | 18275 |
| VK3VN | 215 | 1305 | 3675 | 4745 | 4065 | 14005 |
| VK3QK | — | 675 | 1290 | 1630 | 3875 | 7470 |
| VK2HW | — | — | 2420 | — | — | 2420 |
| VK2GW | — | 2290 | — | — | — | 2290 |
| VK3KD | — | — | 4915 | 1990 | 2105 | 8110 |
| VK4XK | — | — | 8050 | — | — | 8050 |
| VK3APN | 380 | 2910 | 2900 | — | — | 6190 |
| VK3XB | 190 | — | — | 5965 | 6155 | — |
| VK3HE | — | 2720 | 220 | — | — | 2940 |
| VK3OP | 220 | 1555 | — | — | — | 1775 |
| VK3RJ | 565 | — | — | 485 | 1050 | — |
| VK4FH | — | 5155 | 5285 | 6335 | 15175 | — |
| VK4VX | — | — | 10990 | — | — | 10990 |
| VK4U4 | — | 6300 | — | — | — | 6300 |
| VK4JY | — | — | 5425 | 5425 | — | 10850 |
| VK4EZ | — | 4165 | — | — | — | 4165 |
| VK4NQ | — | 3375 | — | — | — | 3375 |
| VK4GU | — | 3395 | — | — | — | 3395 |
| VK4SF | — | 1155 | — | — | — | 1155 |
| VK4RF | Check | — | — | — | — | — |
| VK5MY | — | 520 | 2520 | 900 | 2780 | 6700 |
| VK5NO | — | 5170 | — | — | — | 5170 |
| VK5BS | — | 245 | — | — | — | 245 |
| VK6HU | — | 6730 | 2365 | 4280 | 12375 | — |
| VK6CW | — | 3915 | — | — | — | 3915 |
| VK7GK | 680 | 1345 | 6950 | 2880 | 15815 | — |
| VK7CH | — | 5930 | 665 | — | — | 6595 |
| VK8HA | — | 720 | 2750 | 5870 | 3550 | 12820 |
| VK9KS | — | 1425 | — | — | — | 1425 |

Phone Section

| Call Sign | 30 | 40 | 20 | 15 | 10 | Total |
|-----------|-----|------|-------|------|-------|-------|
| | 30 | 40 | 20 | 15 | 10 | Total |
| VK1GID | — | — | 3330 | — | — | 3330 |
| VK1KM | 510 | 2450 | 11610 | 6510 | 5450 | 21820 |
| VK2APK | 545 | 2155 | 10510 | 5640 | 4485 | 21825 |
| VK2XT | — | 495 | 9640 | 8140 | 4510 | 25775 |
| VK2SO | — | — | 12725 | — | — | 12725 |
| VK2WD | — | — | 3035 | 5890 | 5725 | — |
| VK3AV | 430 | 55 | 1415 | 6510 | 2655 | 5205 |
| VK3ASZ | 220 | 105 | 1330 | 1115 | 215 | 2985 |
| VK3OP | — | — | 2920 | — | — | 2920 |
| VK3BNK | 510 | 2160 | — | — | — | 2670 |
| VK3ER | 805 | 2350 | — | — | — | 3155 |
| VK3NS | — | — | — | — | — | — |
| VK3AMK | 535 | 6990 | 1980 | 3455 | 12920 | — |
| VK3VK | — | 7280 | 2805 | 1345 | 11440 | — |
| VK3XB | 900 | — | — | 7335 | 6235 | — |
| VK3ARX | — | 7615 | — | — | — | 7615 |
| VK3VY | — | — | 5910 | 5910 | — | 11820 |
| VK3SM | — | — | 4485 | — | — | 4485 |

| | | | | | | | |
|--------|-------|------|-------|-------|-------|-------|-------|
| VK3ASQ | — | 190 | 55 | 1510 | 750 | 855 | 3360 |
| VK3BCL | — | 655 | — | — | — | — | 655 |
| VK3ABV | 210 | — | — | — | — | — | 210 |
| VK4KS | — | — | 13575 | 3780 | — | — | 17355 |
| VK4LT | — | 435 | — | 4345 | 3175 | 4710 | 14665 |
| VK4SD | — | — | — | 11620 | — | — | 11620 |
| VK4VX | — | — | — | — | 7755 | 7755 | — |
| VK4SF | — | — | 7735 | — | — | — | 7735 |
| VK4EY | 350 | 55 | 2085 | 3030 | 2095 | 7615 | 11130 |
| VK4DO | — | — | — | 2785 | 3280 | — | 6065 |
| VK4TZ | — | — | 3540 | — | — | — | 3540 |
| VK4T2 | — | — | 2540 | — | — | — | 2540 |
| VK4GU | — | — | 2260 | — | — | — | 2260 |
| VK4BG | — | — | 2105 | — | — | — | 2105 |
| VK4U4 | — | — | 2000 | — | — | — | 2000 |
| VK4QO | Check | — | — | — | — | — | — |
| VK5FO | — | 525 | 7040 | 3235 | 2910 | 13710 | — |
| VK5WP | — | 3735 | 4010 | 3980 | 11720 | — | — |
| VK5ZZ | — | — | 1635 | — | — | — | 1635 |
| VK5ZX | — | — | 1030 | — | — | — | 1030 |
| VK6ET | 370 | — | 2985 | 4035 | 7610 | 14410 | — |
| VK6CW | 430 | 1135 | 5965 | 2005 | 3230 | 12765 | — |
| VK7GK | 660 | 1055 | 11670 | 4385 | 3830 | 21580 | — |
| VK7AZ | — | 325 | 10790 | 4975 | 1385 | 17465 | — |
| VK7JV | — | — | 4005 | 4925 | 2895 | 13530 | — |
| VK7BM | 725 | — | — | — | — | — | 725 |
| VK7CM | — | — | 1900 | 2480 | 1180 | 5720 | — |
| VK8AB | — | — | 1190 | — | — | — | 1190 |
| VK8RY | 535 | — | 230 | 4350 | 1575 | 6090 | — |
| VK8KS | — | — | 3940 | 2340 | — | 5385 | — |
| VK8DI | — | — | 770 | 2280 | 1935 | 4585 | — |
| VK8RY | — | — | 2085 | — | — | 2085 | — |
| VK8DR | — | — | 305 | 770 | — | 1075 | — |

| Individual Band Scores | | | |
|------------------------|--------|----------|-----------------|
| Band | Phone | | C.W. |
| All | VK2KM | .. 37820 | VK2APK .. 22000 |
| Bands | VK2APK | 33335 | VK2E0 18875 |

| Band | Individual Band Scores | | C.W. | |
|---------------------|------------------------|-------|----------|-------|
| | Phone | Band | | |
| 10 mx | VK2XT | 23785 | VK4FH | 15175 |
| | VK4VX | 7755 | VK3XB | 5965 |
| | VK3XB | 7335 | VK2E0 | 5945 |
| | VK6CT | 7010 | VK4FH | 4635 |
| 15 mx | VK2XT | 8140 | VK4VX | 10390 |
| | VK2KM | 6810 | VK3AXK | 8050 |
| | VK2APK | 5640 | VK2APK | 7145 |
| 20 mx | VK4KS | 13575 | VK2APK | 8515 |
| | VK2E0 | 12785 | VK3E0 | 7030 |
| | VK7GK | 11670 | VK4U4 | 6330 |
| 40 mx | VK2KM | 3450 | VK5NO | 5190 |
| | VK2APK | 2155 | VK3APN | 2210 |
| | VK5CW | 1135 | VK2GW | 2919 |
| 80 mx | VK3XB | 900 | VK7GK | 680 |
| | VK2E0 | 620 | VK3E0 | 585 |
| | VK7BM | 725 | VK2E0 | 580 |
| Special 90 mx only: | VK2NS | 805 | No Entry | |

Special 80 mx only: VK2NS 805 No Entry

VK S.W.I. Section

| | | | |
|-----------|-------|-----------|-------|
| WIA-L2022 | 13145 | WIA-L1508 | 2675 |
| WIA-L2280 | 19740 | WIA-L6201 | 24670 |
| WIA-L2161 | 8305 | WIA-L6101 | 32470 |
| WIA-L3385 | 9305 | WIA-L1642 | 3120 |
| WIA-L3405 | 3555 | WIA-L7051 | 6830 |
| WIA-L3055 | 2780 | WIA-L7043 | 6100 |
| WIA-L4144 | 11370 | BERS195 | 5410 |
| WIA-L4164 | 3670 | WIA-L7051 | 2460 |
| WIA-L5080 | 17600 | — | — |

S.W.I. Medallion won by WIA-L6201.

NEW ZEALAND

| Call Sign | C.W. Section | | | | | Total |
|-----------|--------------|------|-------|------|------|-------|
| | 30 | 40 | 20 | 15 | 10 | |
| ZL1AJU | 35 | 2480 | 9925 | 8305 | 4475 | 25180 |
| ZL1AJU | 35 | 1705 | 6380 | 7980 | 3440 | 20080 |
| ZL1AJU | 35 | 52 | 8380 | 7195 | 3085 | 19195 |
| ZL1HF | — | 530 | 7460 | 3585 | 2920 | 14415 |
| ZL1AM0 | — | — | 3010 | 8365 | — | 11375 |
| ZL1AZ2 | — | — | 6280 | 1880 | 3540 | 12700 |
| ZL1TZ | — | — | 7245 | 1195 | 2565 | 11005 |
| ZL1AFW | — | — | 3865 | 4275 | 2715 | 10855 |
| ZL1BDN | 135 | 1625 | 4865 | 1680 | 2375 | 10105 |
| ZL1INX | — | — | 3385 | — | — | 3385 |
| ZL1IB | — | — | 1775 | 110 | 1365 | 3250 |
| ZL1G0 | — | — | 450 | — | — | 450 |
| ZL1RD | Check | — | — | — | — | — |
| ZL1PF | Check | — | — | — | — | — |
| ZL2CD | 160 | 1995 | 5395 | 5985 | 3060 | 16535 |
| ZL2CZ | 110 | 1830 | 7400 | 4235 | — | 13265 |
| ZL2B0 | — | 650 | 3650 | 2540 | 55 | 13090 |
| ZL2CM | — | — | 10220 | — | — | 10220 |
| ZL2CZ | Check | — | — | — | — | — |
| ZL3IS | 645 | 3350 | 10280 | 8555 | 5435 | 26265 |
| ZL3CP | — | — | 3945 | — | — | 3945 |

| | | | | | | | | |
|-------|---|---|---|---|---|---|---|-------|
| ZL2AP | — | — | — | — | — | — | — | Check |
| ZL2AG | — | — | — | — | — | — | — | Check |
| ZL2GR | — | — | — | — | — | — | — | Check |

Phone Section

| Call Sign | 30 | 40 | 20 | 15 | 10 | Total |
|-----------|-------|------|-------|------|------|-------|
| | 30 | 40 | 20 | 15 | 10 | Total |
| ZL1HW | — | — | 8675 | 2020 | 4690 | 13385 |
| ZL1AXB | — | — | 13380 | — | — | 13380 |
| ZL1AXK | 595 | 580 | 3130 | 1430 | 3920 | 9645 |
| ZL1AY | 540 | 840 | 3540 | 1815 | 2445 | 6980 |
| ZL1TZ | — | — | 8350 | — | — | 8350 |
| ZL1AWF | — | — | 2835 | 5435 | — | 8270 |
| ZL1AG0 | — | 4545 | 2635 | 1190 | — | 4344 |
| ZL1AFQ | — | — | 3815 | — | — | 3815 |
| ZL1BDW | — | — | 1565 | 1905 | — | 3470 |
| ZL1QW | — | — | — | 2240 | — | 2240 |
| ZL1E0 | 995 | — | — | — | — | 995 |
| ZL1RD | Check | — | — | — | — | — |
| ZL2AC | — | — | 8365 | 5040 | — | 13405 |
| ZL2CX | 640 | 1400 | 5505 | 3165 | — | 11210 |
| ZL2AVY | — | — | 4730 | — | — | 4730 |
| ZL2OM | — | — | 2120 | — | — | 2120 |
| ZL2AY | 140 | — | 690 | 880 | — | 2610 |
| ZL2AWH | 1285 | — | — | — | — | 1285 |
| ZL2GJ | 1030 | — | — | — | — | 1030 |
| ZL2AOP | 1015 | — | — | — | — | 1015 |
| ZL2ATZ | 1015 | — | — | — | — | 1015 |
| ZL2DM | 685 | — | — | — | — | 685 |
| ZL2BCK | Check | — | — | — | — | — |
| ZL2AX | Check | — | — | — | — | — |
| ZL2QK | Check | — | — | — | — | — |
| ZL2NS | — | — | 10870 | — | — | 10870 |
| ZL2IS | — | — | 5115 | — | — | 5115 |
| ZL2BO | — | — | 5190 | — | — | 5190 |
| ZL2CZ | 1075 | — | — | — | — | 1075 |
| ZL2NH | 335 | — | — | — | — | 335 |
| ZL2OP | Check | — | — | — | — | — |

Individual Band Scores

| Band | Phone | | C.W. | |
|-----------|--------|-------|--------|-------|
| All Bands | ZL2ACF | 13405 | ZL2GQ | 26265 |
| | ZL1HW | 13380 | ZL1AU | 25180 |
| | ZL1AXB | 13380 | ZL1AH | 20080 |
| 10 mx | ZL1S | 5115 | ZL2GQ | 5435 |
| | ZL1HW | 4690 | ZL1S | 3145 |
| | ZL1AXK | 3920 | ZL1AU | 4475 |
| 15 mx | ZL1AWF | 5435 | ZL1AMO | 8305 |
| | ZL2ACP | 5040 | ZL1AU | 9395 |
| | ZL2AVY | 4730 | ZL1AU | 7930 |
| 20 mx | ZL1AXB | 13380 | ZL2GQ | 10280 |
| | ZL1NS | 10870 | ZL2OM | 10280 |
| | ZL2ACP | 8363 | ZL1AU | 9925 |
| 40 mx | ZL1AGO | 4345 | ZL2GQ | 3350 |
| | ZL2GX | 1400 | ZL2AU | 2420 |
| | ZL2CZ | 940 | ZL2 | 1995 |
| 30 mx | ZL2AWH | 1285 | ZL2GQ | 645 |
| | ZL2XN | 1075 | ZL2GX | 135 |
| | ZL2GJ | 1030 | ZL2GQ | 110 |

Europe (continued)

Africa

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Report from Secretariat, I.A.R.U. Region 3 Association, to the Federal Council, W.I.A.

General.

Last year, at Canberra Convention, I reported as Federal President on the activities of the Institute, the Executive, and the Secretariat in attempting to formulate an Interim Constitution for the Region 3 Association. It was stated that the draft constitution brought to the surface some widely divergent views from outside the Region 3 Association. A series of amendments which were incorporated in a further draft constitution. The Institute at Canberra, through motion 1989/4.2 approved the I.A.R.U. Interim Constitution and since that time the Interim Constitution has received the approval of the Directors from Japan, Philippines and New Zealand. The Secretariat determined that as a result of this approval, the I.A.R.U. Region 3 Association formally came into existence on 1st July, 1969. It thus took 18 months from the time the Institute agreed to call a meeting with the aim of forming an organisation, until the time the organisation was formalised.

During this period the work of Federal Vice-President, David Rankin, VK3QV, was invaluable and the Interim Secretariat benefited greatly from his advice on international matters. We were also greatly indebted to his appointment to the Secretariat due to pressure of work, and the exigencies of his office in the Institute. The I.A.R.U. Region 3 Association is indebted to him.

The Association is also greatly indebted to the W.I.A. Federal President and Secretariat for the thorough and detailed work connected with the formulation of rules embodied in the Interim Constitution. It is a credit to him that the rules are acceptable to four countries of widely different legal and social backgrounds could be drafted, circulated, amended, re-circulated and finally approved in what I believe is a relatively short time considering the difficulties of communication within the Region.

Having received formally come into existence, the Secretariat consisting of Messrs. P. Williams, VK3IZ; M. Owen, VK3KJ; D. Wardlaw, VK3ADW; M. Hull, VK3ZS; commenced operations. Mr. Owen, VK3KJ, kept the Region minutes for circulation to the Directorate. The Secretariat prepared a 23-page statement in July—its first month of operation. This statement was sent to the Region 3 Association, Region 2, I.A.R.C., J.A.R.L., N.Z.A.R.T., P.A.R.S., W.I.A. and the secretaries of Amateur Radio Societies in Australia, New Zealand, Japan, Hong Kong, India, Korea, Nepal, Thailand, Singapore, Indonesia, Pakistan, New Caledonia, Fiji, Okinawa. This material was also sent to representative Amateur Radio operators in Iran, Afghanistan, Laos, Western Samoa. A point of contact in China, Cambodia and Taiwan was known to the Secretariat.

This material, which was also forwarded to Federal Councillors, contained: A record of discussions in Sydney; a statement from the Sydney Congress; a statement of the I.T.U. Conference; a copy of the Interim Constitution; a four-page explanatory covering letter, and a questionnaire. The Secretariat felt that this material was brief and to get up to date, and explain the nature of the organisation which had been formed to assist in the advancement of Amateur Radio in the Region.

At the second meeting of the Secretariat, called for September 1969, it was resolved to not call for a further copy of the questionnaire. Circulated material had been received. We anticipated some questionnaires returned, and at least some acknowledgement from the 24 societies contacted. We were relieved to report that the response is disappointing, and we have from time to time wondered whether the material was actually passed on to the interested radio systems. Acknowledgment has recently been received from some countries, viz: Japan, New Zealand, Western Samoa; so we have some contact with the Region 3 Association.

Gentlemen, this brings me to the point where I wish to state what I see as the greatest barrier to success of the I.A.R.U. Region 3 Association. I believe to establish a firm contact with a person or persons in the countries of the region, material sent in a printed form is not the best way. The best way is that of a Society seems not to be the way to maintain effective liaison, and seems to be an ineffective way to maintain contact. Many ways to improve communications and liaison suggest themselves:—

1. Personal contact (this can be of several types). I believe that it is essential that there would be for some person from the Secretariat to actually go to these countries and search out a person connected with the Amateur

Society and request that he canvass support for the Association, and be the known point of contact. This would be costly if it did not achieve the objective, but I feel would be a good investment if it did achieve its aim, and establish effective communication. The Institute took the initiative in getting the Association to the point where the Secretariat was to take the initiative in keeping it airborne.

An alternative is perhaps to call a conference of Region 3 Societies to be held centrally in South East Asia, where representatives from nearby countries could travel. This would have the added advantage that the forthcoming I.T.U. Conference could form the crystallising influence to such a Conference, and that such a Conference could have wider publicity value than a "whistle-stop" tour. Perhaps it is necessary for both activities to be considered.

In summary, I believe that personal contact must be established and maintained even though it is a costly business. Correspondence seems to be the less costly and less effective.

2. Radio contact. This seems obvious to a group of communicators who are equipped to maintain communication by radio throughout the Region. It is a matter that the Secretariat will also be attempting to do. Comments have been passed to the Secretariat about the use of the well-established "Sea-Net", but 30 years ago this was a novelty. In 30 years I have felt loth to use this somewhat private net for Region 3 Association purposes, without invitation. Perhaps this is being too cautious. The use of "Sea-Net" should be further. The very useful skeds I held in the past with WIKE of A.R.R.L. and G2BVN of U.S.G. and G2BZ of U.S.G. have been of great use. Skeds with Regional representatives at least weekly should be possible, and may do much to improve liaison. The Secretariat is examining this aspect at the moment.

Notwithstanding the difficulties of communication, much informal and formal correspondence has ensued between the Secretary-General and I.A.R.U. Headquarters, and the Secretary-General and Region 1, also from time to time between the Secretariat and other countries, especially the Directors. Of recent months, much correspondence has been apparent, most of the correspondence has been concerned with the forthcoming I.T.U. Conference. The Secretariat has been in contact with communications from overseas in his capacity as a Region 3 officer, and the Federal Secretary of the W.I.A. receives communications from overseas in his capacity as Secretary. Both organisations that the same person holds these offices, and while the function of the Federal Secretary of the W.I.A. is to oversee liaison officer, he should be closely connected to the Region 3 Secretariat while Australia is providing the personnel. Other countries have scarcely any direct view, the overseas liaison officers are the Region 3 Directors for J.A.R.L. and N.Z.A.R.T. While Australia provides the Secretariat I believe that the officer responsible for W.I.A. overseas liaison—however he is, and by whatever he is designated—should be close to the Secretariat.

In material sent out recently to the Directors, the Secretariat has been asked to determine on several matters. I have placed these before the Institute for determination in Adelaide, and they appear on the agenda paper. I refer to:—

1. Item 3.3 regarding the calling of a regional conference this year. You will recall that the next planned meeting of the Region 3 Association was to be held in Tokyo, for 1971 in Tokyo, but the calling of an I.T.U. Conference in that year has altered opinions, and we have asked the Directorate for some guidance.

2. Item 3.2 regarding the formulation of a regional policy regarding the 1971 I.T.U. Conference. The Secretariat has been asked to way for the Adelaide Convention on the assumption that a regional policy should be determined. Japan and New Zealand have indicated that they would like to be holding study groups and the like in order to determine their own policy, and will communicate with the Secretariat in due time.

3. Item 4.1 regarding the proposed "General Regulations" submitted by the N.Z.A.R.T. Director. These have been modelled on I.T.U. Conference rules, and have been put in detail. I believe they represent a fair set of rules of procedure should we consider the calling of a regional conference in the near future. I have asked the Region 3 Association for your adoption so that the W.I.A. vote on the N.Z.A.R.T. proposal can be forwarded to the Secretary-General.

During the debates on these items, I propose to put the views of the Secretariat on these matters, and following their resolution, I will

through the Secretariat convey the views of the W.I.A. to the other Directors and the Region generally. It is perhaps fortuitous that the I.A.R.U. Region 3 Association has formally come into existence at the same time as the Amateur Service is faced with a possible threat to its frequencies. One of the major objectives of the W.I.A. is the preservation of frequencies, and with that objective in view, the Secretariat hopes for perhaps more spectacular achievements in the future.

I wish finally to report on some administrative and internal matters. You will have heard that the offices of the Secretariat that a bank account has been opened and the first of the three W.I.A. contributions has been paid to the Secretariat. The J.A.R.L. has indicated that they wish to remit the sum of 500,000 Yen before the end of March, and they have been invited for this amount by the Secretary-General.

You will have noticed from the correspondence that the Secretariat has decided to adopt as a motif that as adopted by Region 1 and Region 2, with the map of Region 3 as a different centrepiece. The Secretariat is investigating the matter of having some stationery printed, and it has been suggested that the printing of stationery for the Region 3 organisation be that of an international metric standard size.

Some correspondence has been initiated between the Secretariat and Mr. Pierce Healy, VK2APQ, in relation to the publication of a bulletin, and in relation to his appointment as Editor of the bulletin. The bulletin is to be half of the Region by the Secretariat and prepared on behalf of the Secretariat by the Region. There have been little material sent to the Secretariat from other countries for inclusion in a bulletin to date, but we hope and expect that this to improve as our channels of communication improve.

Both the Federal Secretary and I have raised the matter of the position of W.I.A. Director in relation to the annual Convention. This has been discussed in aspect of the Secretariat, but which I hope will be discussed in Adelaide. I have endeavoured to keep you up to date with Regional matters by sending you a circular of information to the Region, and will continue to do so in my capacity as Region 3 Director—this is one of the major objectives of the Region 3 Secretariat, it is a simple matter to obtain extra copies for you.

In conclusion, whilst the past year could not be called one of spectacular achievement, nevertheless is one of significant achievement, and above all, a firm base has been laid on which to build—admittedly slowly, but we believe surely. Over the past 18 months we have waited for the countries in the Region to ask the Secretariat to do certain things—the result of this approach has been disappointing. I believe the Institute, through its Director has to initiate in a positive way, and that this initiative has to be channelled through the Secretariat to stimulate the Region to the objectives for which the I.A.R.U. Region 3 Association was formed. You have appointed a Secretary-General, and a co-ordinating group to the Secretariat, who have all worked very hard during the past 18 months since the Institute first suggested the setting up of a Region 3 organisation.

Looking at the matter from the point of view of the Institute, I consider that the Region 3 Association must be given encouragement in every possible way by the Institute. In the long term, the philosophy of the W.I.A. must be established within those countries which are as yet not only not members of the Region 3 organisation, but are not yet amateur oriented. The means by which this can be achieved may be a matter of debate, the usual Amateur activities such as contests and the like may offer more encouragement to the world at large that the Regional organisation is a viable Amateur organisation. The achievement of the W.I.A. seems dependent on the leadership that our organisation is prepared to exhibit.

Finally, but not least by any means, both the Institute and the Region owe a debt of gratitude to Mr. VK3QV, David Rankin, who has been a hard-working Secretary-General in a formal capacity, but who for many years—indeed, the longest time before the position of everything he could to foster this organisation. I hope he retains this very special interest in the I.A.R.U. Region 3 Association for many years to come. I believe that the position of for great things—dependent on the enthusiasm of its officers and your continued support.

(Signed) J. Battrell.

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Sub-editor: ERIC JAMIESON, VK3PL
Ferreteron, South Australia, 5233.
Closing date for copy 30th of month.

AMATEUR BAND BEACONS

VK4 144.390 VK4VV, 107m. W. of Brisbane.
VK5 53.000 VK5VF, Mount Lofty.
144.800 VK5VF, Mount Lofty.
VK6 52.900 VK6V, Stuart Hill, 1000 ft.
52.900 VK6TS, Carnarvon.
144.500 VK6VE, Mt. Barker.
145.000 VK6V, Tuart Hill, 1000 ft.
145.000 VK6VF (on by arrangement).
VK7 145.000 VK7VF, Devonport.
ZL3 145.000 ZL3VHF, Christchurch.
JA 1.565 JA1QY, Japan.
W 50.091 WBEKAP, U.S.A.

The beacon list is gradually growing in length. Another is added this month as the result of a message from Doug VK4KIK in Darwin that WB6KAP on 50.091 MHz. has been heard by Ross VK4RO and Peter VK4ZPL on 28th April at 12.20 E.S.T. No QSO resulted, but sids are now being maintained around 1100 E.S.T. daily, on 28.55 MHz., in an effort to make it two-way on 6 metres. So, once again, 6 metres can offer a surprise for anyone.

Talking of 6 metre surprises, VK5 and VK3 received a very pleasant one on 25th April when an extended opening to Japan was available for about six hours commencing around 1530. At times the band was an utter bedlam, and those on the air found the going a bit tougher than expected. However, some stations were able to notch up scores to about 25 JAs worked, many at good signal strength. Noted in VK5 were the following districts: JA0, JA1, JA2, JA4, JA5, JA6, JA7, JA8, JA9, JA10, JA11, JA12, JA13, JA14, JA15, JA16, JA17, JA18, JA19, JA20, JA21, JA22, JA23, JA24, JA25, JA26, JA27, JA28, JA29, JA30, JA31, JA32, JA33, JA34, JA35, JA36, JA37, JA38, JA39, JA40, JA41, JA42, JA43, JA44, JA45, JA46, JA47, JA48, JA49, JA50, JA51, JA52, JA53, JA54, JA55, JA56, JA57, JA58, JA59, JA60, JA61, JA62, JA63, JA64, JA65, JA66, JA67, JA68, JA69, JA70, JA71, JA72, JA73, JA74, JA75, JA76, JA77, JA78, JA79, JA80, JA81, JA82, JA83, JA84, JA85, JA86, JA87, JA88, JA89, JA90, JA91, JA92, JA93, JA94, JA95, JA96, JA97, JA98, JA99, JA100. 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JA801, JA802, JA803, JA804, JA805, JA806, JA807, JA808, JA809, JA810, JA811, JA812, JA813, JA814, JA815, JA816, JA817, JA818, JA819, JA820, JA821, JA822, JA823, JA824, JA825, JA826, JA827, JA828, JA829, JA830, JA831, JA832, JA833, JA834, JA835, JA836, JA837, JA838, JA839, JA840, JA841, JA842, JA843, JA844, JA845, JA846, JA847, JA848, JA849, JA850, JA851, JA852, JA853, JA854, JA855, JA856, JA857, JA858, JA859, JA860, JA861, JA862, JA863, JA864, JA865, JA866, JA867, JA868, JA869, JA870, JA871, JA872, JA873, JA874, JA875, JA876, JA877, JA878, JA879, JA880, JA881, JA882, JA883, JA884, JA885, JA886, JA887, JA888, JA889, JA890, JA891, JA892, JA893, JA894, JA895, JA896, JA897, JA898, JA899, JA900. JA901, JA902, JA903, JA904, JA905, JA906, JA907, JA908, JA909, JA910, JA911, JA912, JA913, JA914, JA915, JA916, JA917, JA918, JA919, JA920, JA921, JA922, JA923, JA924, JA925, JA926, JA927, JA928, JA929, JA930, JA931, JA932, JA933, JA934, JA935, JA936, JA937, JA938, JA939, JA940, JA941, JA942, JA943, JA944, JA945, JA946, JA947, JA948, JA949, JA950, JA951, JA952, JA953, JA954, JA955, JA956, JA957, JA958, JA959, JA960, JA961, JA962, JA963, JA964, JA965, JA966, JA967, JA968, JA969, JA970, JA971, JA972, JA973, JA974, JA975, JA976, JA977, JA978, JA979, JA980, JA981, JA982, JA983, JA984, JA985, JA986, JA987, JA988, JA989, JA990, JA991, JA992, JA993, JA994, JA995, JA996, JA997, JA998, JA999, JA1000.

Many missed the excellent opening to Japan through not expecting anything like this to happen. Some of the others doing housework, gardening, etc. I was working, and so the sad story goes on. However, I think the fact that the opening was so good, and was heard to complain he could not make any headway through the JAs as his nearest Amateur neighbour had for a way was a big one. I am sure you will guess vice versa in turn. There is an obvious simple solution to such a problem. Any two or more Amateurs must know such problems arise with even local working, and particularly with Australian DX, when you are living close together. Prior arrangements must be worked out by the parties concerned that while one station transmits, the other remains off the air. As soon as he finishes the QSO which would be the first, he bounces him off the air until his neighbour has finished. By such rotation of contacts, quite a number of stations can be worked in a short space of time, much better than working one station. So get on with it, any in this situation, and work out a destiny for yourself and your neighbours too late when the DX is coming through!

And still on the DX, congratulations to Ron VK3AKC, for winning the 1966 Contest with a commendable seven-day score of 3,333 points, a daily average of almost 480 points. The overall response to the Contest was very disappointing to anyone with a genuine interest in v.h.f. The Federal Contest Committee made no comment when submitting the results, but the results from Australia of 33 stations was all the comment that was needed. Two logs from VK5, one of them mine. Small wonder I feel I have been hammering my head in shame. I have been hammering for a long time for a better deal for v.h.f. operators in the Remembrance Day Contest, but the results are still the same. I am particularly perturbed by such operators, and perhaps Limited licensees in particular, then the ground is made considerably harder to gain any worthwhile improvement. Therefore, I think the deplorable lack of interest in the Ross Hill Contest should be subject to discussion at v.h.f. Group meetings in all Divisions of the W.I.A. to see what is wrong. If you have any suggestions, please let me know.

I am pleased to note that Bob VK3AOT has been appointed Publicity Officer of the VK3 v.h.f. Group, and that Alan VK3ZEO in Deniliquin

has been working regularly into Melbourne on 432 MHz. (more details awaited). The distance is about 160 miles, so there should be opportunities for VK3s to add another State for 432. Bob also advises from a letter from Col VK6RCM, that the Darwin Amateur Radio Club is planning 6 and 2 metre beacons. The proposed frequency on 6 being 52.200 MHz., with 50 watts of r.f. As soon as something concrete comes out of this matter, I shall be glad to see the beacons being actually operational. I shall be glad to incorporate them in the list at the head of this page. Further, Bob mentions just about all the bugs have been ironed out of the VK3 beacons, but they are now awaiting call sign before being able to proceed. If it looks like VK3 will surely have something operational in 1970, leaving only VK2 to list that final spot.

A letter from Brian VK3BBB on the subject of the proposed "Worked All Bands Award" mentioned in May "A.R.", suggests the award be called "Worked All Bands Available Award"—thus overcoming the problem of the limitation of bands available to Z calls. The idea is quite good, and worthy of further thought. It calls to work all bands between say 35 and 1296 or 2300 MHz. (representing a reasonable upper limit to likely participants), while those with full call signs should be allowed to add plus 160 to 10 metres inclusive. Workable? What do you think? [As we see it, the above comments are not intended to be a criticism, and the draft rules made available at the last Convention, make provision for A.O.L.C.P. holders. The idea of setting 2300 MHz. as a reasonable frequency limit, completely ignores the original idea behind the award of encouraging operation in the u.h.f. bands.—E.D.]

I note with interest preparations are well under way for the South East Radio Groups Convention at Mt. Gambier over the holiday week-end, 13th and 14th June, and that the group now have their own call sign, the VK3SR, which will be used as the official station for the Convention. The programme as always looks very interesting and I don't think you would regret attending. I am sure the true country-style hospitality will long be remembered. The Club station will operate on 144.166 MHz. s.s.b., Channel A and B f.m., and 52.525 MHz. f.m.

E.M.E. DE LUXE!

Project Moonray. Here's the real winner for world-wide 432 MHz. DX! The antenna consists of a 100 feet square parabolic reflector which is built on the ground and points straight up. The reflector is galvanised and is 100 feet in diameter. The focal point is 100 feet in inches holes with a shape accuracy of plus or minus one half inch. The primary feed is supported on an aluminium pole, and is a controlled motor which gives moon tracking for two hours. The feed trolley track is supported on another trolley which gives control in declination.

The gain and beamwidth for various frequencies, as measured by radio astronomy techniques, is as follows:

| Freq. | Gain | Polarisation | Beam Width | Mxtr. Power |
|---------|----------|--------------|------------|-------------|
| 144.032 | 31 dB. | Circular | 4.8 deg. | 800w. |
| 220.001 | 34.5 dB. | Circular | 3.1 deg. | 700w. |
| 432.000 | 42.2 dB. | Circular | 1.6 deg. | 700w. |

The receivers are mounted in the feed trolleys and have noise figures "consistent with the frequencies". 144 MHz., 2 dB.; 220 MHz., 1.5 dB.; 432 MHz., 1 dB.

1296 MHz. is in the works and although not ready has the following specs: 1296.000 MHz., gain 49 dB., linear polarisation, 0.55 deg. beam width and noise received 100 yd. 300 yd. A professional set-up? No! It's Sam Harris' WIFZJ-KP4 at Arica, Puerto Rico. And does it work? To the limit of the equipment Sam had worked SMBAE, KSMCY, WIMX and KC2BA. The first two contacts were "particularly pleasing" for Sam. He heard them in contact. QSY'd to frequency and his "CQ" brought the results.

My thanks to "Break In" magazine for this information which was originally listed in Veron v.h.f. bulletin.

1296 MHz. ACTIVITY IN VK3

From Neil AX42T comes some interesting news about 1296 MHz. activity in VK4. Activity on this band slowed down when Tom VK4KE returned to England late in 1966. However, in the last few months, he built a complete 1296 station, and together with AX42T attempted to measure antenna gain over a distance of two miles, but much of the work was caused this to be abandoned. On 11th April contact between the two stations was made over a distance of 10 miles. The stations used 559 c.w. n.b.f.m., 559 c.w. contacts ensued both ways, and R5 S2/3 reports with modulation. AX42T/2 was on Round Mountain 1296, 2300 and 2300. The station is at Summit, 20 miles north of Brisbane. Then the

latter moved further north to Belthorpe (1600 ft.), 12 miles N.E. of Kilroy, and on Sunday, 12th April, at 10.50 a.m. Yuesu s.s.b. received a distance of 243.45 miles, reports from AX42T being 559, and AX4NO 439. This distance is very close to the recent VK3ZKB-VK1WV contact. Both paths are very rugged, having to cross Mt. Barney in the Great Dividing Range at an altitude of approx. 4500 ft. No help from the weather. Due to an extensive low pressure system and considerable wind over the length of the paths. Signals on 1296 over both paths were no better than those on 144 MHz., the liaison frequency.

The equipment used: AX4NO—1296 MHz. converter with 8.3 db. noise figure, as described in 1970 "A.R." by Neil Yuesu s.s.b. receiver fitted with n.b.f.m. discriminator. Transmitter, 144 MHz. QW203/12, about 3w. output, to 10 ft. parabola built in sections for transport, fed by MA4600 144/432 tripler feeding a 432/1296 BAY50 tripler, both of R.S.G.B. design. Output on 1296 2.5w. Antenna 8 ft. diameter F/D 0.6 parabola built in sections for transport, fed with home-made co-ax. and linearly polarised circular waveguide feed.

AX42T used the Jan. 1970 converter with n.b.f.m. of 4 dB. The work was improved from the original 9.8 dB. by modification to the mixer diode coupling loop, fed into Heathkit SB300 s.s.b. receiver. Antenna 10 ft. diameter F/D 0.6 parabola built in sections for transport, fed with home-made low loss co-ax. feeding a simple dipole with half wave circular reflector. Both antennas constructed from plywood and fly screen mesh, and were 10 ft. high. A total of approx. 900 road miles were covered by both parties to complete these two contacts. Congratulations to both gentlemen for an outstanding effort over rough country. Claims have been lodged for the VK4/VK2 records, but at the moment the Australian record position is obscure. Many thanks, Neil AX42T, for supplying such adequate information. I feel this is the type of news which is read with interest all over the continent.

TOWNSVILLE SKED TIMES

Your attention is drawn to a slight alteration in the sked times which is being imposed by the Amateur Radio Club members. The v.h.f. section of the Club have two sked times on Sunday, one commencing at 8.30 a.m. and the second commencing at 10.30 a.m. The frequency used is 53.032 a.m. net. Thanks to VK4RS9 (Secretary) for above information.

MEET THE OTHER MAN

Wif Emmett, VK7WF, formerly VK2ZAQ, hails from Burnie, Tas., at a location 200 feet above sea level, with an unobstructed ocean view. He has been living in Burnie since 1959, at that time living in Hobart, and using 6 and 2 metre gear. All this was left in Hobart with his brother Reg, now VK7KKK (VK2ZQA), when Wif moved Burnie in 1966, to a "lousy QTH" from where operation was only worthwhile on 2 metres. Subsequently, having his present home, he asked him to construct equipment for 432 and 1296 MHz., with results known to all.

WIF VK7WF

Wif is an industrial chemist, but can find enough time to be operational on 52, 144, 432 and 1296 MHz. On 52 MHz. he runs s.s.b./c.w. 800w. p.e.p. two 8KDs, 3 element yagi 10 ft. high, into a VK3 FET converter. 144 MHz. gear also runs on s.s.b. and c.w. 120w. p.e.p., using a QW203/12, 10 yd. 300 yd. high, and another VK3 FET converter. 432 uses a.m./c.w. with either 150w. and a 4X150A or a varactor tripler. 1296 uses 10 yd. 300 yd. high, and a 4X150A or a varactor tripler. The station is at Summit, 20 miles north of Brisbane. Then the

is a Yaesu FRDX400 at 28 MHz. On 1296 MHz, Wilf uses a solid state converter with crystal mixer, 38 MHz, i.e., 3CX100A5 tripler from 432 to 1296 which is driven from varactor tripler, 15w, input, to the 3CX100A5, antenna 4 ft. home-brew dish with dipole feed.

For s.s.b. purposes, Wilf uses a home-brew h.f. phasing rig on 14 MHz, with transverters. His antenna systems are rather low, but he points out that this is due to a combination of factors: Living in a rented premises, length of stay in Burnie unknown, excellent QTH anyway, and lack of time to lift them higher due to 432 and 1296 MHz. building programme.

Wilf has worked all States from VK1 to VK9 inclusive and ZL1, 2 and 3 on 32 MHz., and VK2, 3, 4, 5 and 7 on 144 MHz. On 432 the areas are Geelong, Birchop and Melbourne in VK3, and a "scratch" contact to M. Gambler, Melbourne and Geelong are his contact areas on 1296 MHz. He holds a certificate for Worked All States on 30 MHz., and was the VK7 Ross Hull Contest winner in 1962/3. I note in May 1970 "A.R." Wilf won the VK7 Ross Hull Award for 1969/70.

During former years, Wilf was Secretary of the VK7 V.I. Group and Vice-President, North West Zone in 1968. Looking to the future, he has his eyes on contacts to Adelaide area on 432 and 1296 MHz, and given a reasonable chance he hopes to get there.

In the photograph depicting Wilf's gear, from left to right we see the 432 varactor tripler/filter and 1296 tripler are in little boxes, rack contains 2 and 6 metre transverters, 2 metre linear, the metre linear normally mounted in the space at the bottom of rack, then s.s.b. exciter, and FRDX400 receiver on right. The 432 final rests on the floor.

So there's a man to keep an eye and ear upon, he's got the gear, and the location, most of the remainder is up to you at the other end.



Thank you Doug for your letter, the information is very helpful, and gives us down here just a little idea of what you must be enjoying in the north.

Finally, very pleased to receive my QSL card from Bernie VK6BZ at 144 MHz. contact with him during Feb. And I guess there will be many others just as pleased to receive theirs. Some 66 others in fact!

Will these kind enough to send me copy for inclusion in "A.R." please ensure it arrives here by 30th of the month at the very latest, a day or two earlier would be preferable.

VK2 MID-WINTER V.H.F.-U.H.F. CONTEST 1970

The Contest Committee of the VK2 V.h.f./T.v. Group invites all Amateurs and S.w.f.s with v.h.f. and/or u.h.f. equipment to participate in the 1970 Mid-Winter Contest. This will be held during the Queen's Birthday week-end in June. Copies of these rules are being sent to all States and ZL, welcoming distant QSOs.

Date/Duration—Contest starts Sat., 13/6/70 1400 hrs. (E.A.S.T.) and finishes on Mon. 15/6/70 1200 hrs. with rest periods.

The operating times are:
Sat. 13/6/70—1400 hrs. to 2200 hrs. (4 hrs.).
Sun. 14/6/70—0800 hrs. to 1200 hrs. (4 hrs.).
Mon. 15/6/70—0800 hrs. to 1200 hrs. (4 hrs.).

There are two time divisions for which entries may be submitted: Division "T" for the Total, or overall contest duration, and Division "S" for the best scoring six consecutive contest hours which may, if desired, be broken by one of the rest periods; e.g. from 2000 hrs. Sat. night to closing at 2200 hrs. then from 0800 hrs. on Sun., morning to 1100 hrs., and 1200 hrs. to 1300 hrs. is accepted as six consecutive contest hours.

Entries may be submitted for either Division "T" (Total) or Division "S" (Six Hours), or both of these, but the winner of Division "T" will not be eligible to also win Division "S".

The various classes in which participants may enter are:
Class H—Home Station.
Class M—Mobile Station.
Class P—Portable (field) Station.
Class S.w.l.—Listener, Home Station.

A station may enter in more than one class if satisfying the conditions, e.g. he could work from home, then go mobile and then portable.

Anything beyond the 39th inevitably must be left a month, and frequently the news is then outdated. Your co-operation is gratefully sought.

That's all the news for this month, nothing received from VK3 or 6. Always pleased to hear from anyone. The thought for the month: "Dogs are much like people. Usually only one in a group is barking at something in particular; the others are barking at him."

Until next month, 73, Eric VK5LP. "The Voice in the Hills."

One scoring contact per station is allowed in every one "clock work" for each band a station can work. One contact per clock hour means one QSO between, say, 1300 hrs. and 1400 hrs. It is not necessary to wait a full hour to have a second scoring QSO with the same station on the same band, e.g. "A" works "B" at 1259 hrs.; they may then work again any time from 1300 to 1359 hrs., and their following QSO is between 1400 and 1459 hrs., and so on.

A mobile station may work the same station within the hour period, providing he has increased the distance from that station by more than 10 miles.

Serial Numbers must be exchanged as usual before points may be claimed for a contact. The five or six digit serial number to be the RS report (RST for telegraphy) followed by three digits starting as shown below and increasing by one for each successive contact:

For all 6 metre QSOs start at 601
For all 2 metre QSOs start at 201
For all 420 MHz. QSOs start at 401
For all other (incl. t.v.) start at 001.

Note that the numbers for Net QSOs are to be in the same sequence of numbers as for the whole band.

Entries should be sent to reach the Secretary, V.H.F.-T.v. Group, Wireless Institute Centre, 14 Atchison Street, Crown St., N.S.W., 2065, by Friday night, 17th July, 1970.

The committee would appreciate all comments on the contest and all entries even if you work only one station. An enquiry can be sent to Bill O'Donnell, VK2ZBU, 41 High St., Wulloughby, N.S.W., 2068, or in business hours phone 440-3555 (Sydney STD 62). If any station interferes or is in the den of the committee would appreciate notice of the station's location so that all concerned can be notified.

TABLE OF INCENTIVE RATINGS AND MULTIPLIERS

| Category | Rating | 6 and 2 mX Nets: Home/Port./Mobile | 32 and 144 MHz: Tune: Home | 52 and 144 MHz: Tune: Port./Mobile | 70 cm, 4380: Net: Home | 70 cm, 4380: Net: Port./Mobile | 420 and 576 MHz: Home | 420 and 576 MHz: Port./Mobile | 1215 MHz: Home | 1215 MHz: Port./Mobile | 2.3 to 10 GHz: Home | 2.3 to 10 GHz: Port./Mobile | 21 GHz: Home | 21 GHz: Port./Mobile |
|-------------------------------------|--------|------------------------------------|----------------------------|------------------------------------|------------------------|--------------------------------|-----------------------|-------------------------------|----------------|------------------------|---------------------|-----------------------------|--------------|----------------------|
| 6 and 2 mX Nets: Home/Port./Mobile | 1 | 2 | 4 | 5 | 4 | 5 | 10 | 11 | 16 | 17 | 20 | 21 | 23 | 24 |
| 52 and 144 MHz. Tunable: Home | 3 | 4 | 6 | 7 | 6 | 7 | 12 | 13 | 18 | 19 | 22 | 23 | 25 | 26 |
| 52 and 144 MHz. Tunable: Port./Mob. | 4 | 5 | 7 | 8 | 7 | 8 | 13 | 14 | 19 | 20 | 23 | 24 | 26 | 27 |
| 70 cm. (438) Nets: Home | 3 | 4 | 6 | 7 | 6 | 7 | 12 | 13 | 18 | 19 | 22 | 23 | 25 | 26 |
| 70 cm. (438) Nets: Port./Mobile | 4 | 5 | 7 | 8 | 7 | 8 | 13 | 14 | 19 | 20 | 23 | 24 | 26 | 27 |
| 420 and 576 MHz: Home | 9 | 10 | 12 | 13 | 12 | 13 | 18 | 19 | 24 | 25 | 28 | 29 | 31 | 32 |
| 420 and 576 MHz: Port./Mobile | 10 | 11 | 13 | 14 | 13 | 14 | 19 | 20 | 25 | 26 | 29 | 30 | 32 | 33 |
| 1215 MHz: Home | 15 | 16 | 18 | 19 | 18 | 19 | 24 | 25 | 30 | 31 | 34 | 35 | 37 | 38 |
| 1215 MHz: Port./Mobile | 16 | 17 | 19 | 20 | 19 | 20 | 25 | 26 | 31 | 32 | 35 | 36 | 38 | 39 |
| 2.3 to 10 GHz: Home | 19 | 20 | 22 | 23 | 22 | 23 | 28 | 29 | 34 | 35 | 38 | 39 | 41 | 42 |
| 2.3 to 10 GHz: Port./Mobile | 20 | 21 | 23 | 24 | 23 | 24 | 29 | 30 | 35 | 36 | 39 | 40 | 42 | 43 |
| 21 GHz: Home | 22 | 23 | 25 | 26 | 25 | 26 | 31 | 32 | 37 | 38 | 41 | 42 | 44 | 45 |
| 21 GHz: Port./Mobile | 23 | 24 | 26 | 27 | 26 | 27 | 32 | 33 | 38 | 39 | 42 | 43 | 45 | 46 |

To find the Multiplier for a contact, ADD the ratings of the two stations, OR: In the above chart, select the horizontal row corresponding to the category of one of the stations. Then select the vertical column for the category of the other station. The Multiplier for that pair of stations is the number shown at the intersection of these two lines.

VK7WF—see text for outline of equipment.

GENERAL NEWS

Of some note to those in other States is that interest in repeaters is growing in VK3, experimental equipment has been built and tested. The last meeting of the group was with 14 members present and Gary VK3ZK was elected co-ordinator of the group.

Doug VK8KK, in Darwin, sent me a letter which just missed out on the closing date for copy last month. However, much of the information in the letter is of general interest. He reports first trans-equatorial openings to Japan from Darwin occurred on 19th February this year and lasting from 1330 to midnight. TE signals get up to over S9 most evenings, but a.m. signals are very hard to copy even with 100% modulation. The notes with interest that Ian VK5V/4 is a note mainly F2 with TE occasionally, from 1330 to midnight, whilst those living in Cairns, Rockhampton and Carriacou are similarly treated. David VK5AD in Tennant Creek gets F2 about sundown, followed by mostly F2 with TE. So there is plenty of variety in the north.

Doug and David have been keeping regular check-ins with WGABY, WBNML and W6IRA from 0910 to 1100 E.S.T. on Saturdays and Sundays, confirming they are there at 28.2 MHz. Doug says that he has been heard although the Ws are running 60w, output to stacked 9 el. yagis! Most Ws use 50.1 to 50.125 as their channel. In New Orleans there is now a beacon, KSAGI, beaming south midnight to 1400, on 50.105, running 300w, or 800w, on demand.

The JAs have been working KX6KH on 52.2 a.m. in the Marshall Is. but Doug had not worked him at time of writing. DU1PH reports there is little DX activity in the Philippines because the locals are now tied up to a net frequency.

NEW CALL SIGNS

JANUARY 1970

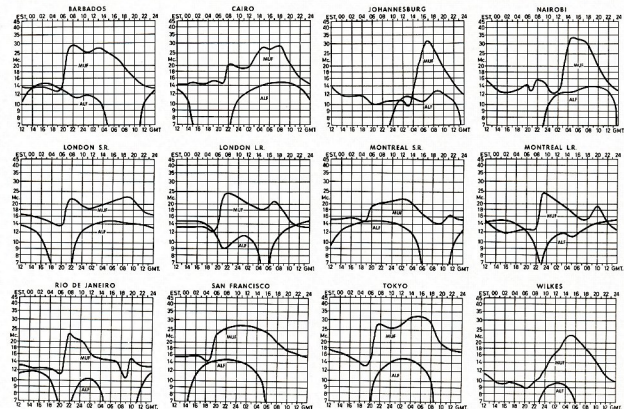
VK1KO—R. K. Westbrook, 9 Haines St., Curtin, 2605.
VK1ZH—G. R. Hovey, Station: University House, Acton, 2601; Postal: P.O. Box 4, Canberra, 2600.
VK2GS—N. J. Stewart, 131 Bradfield Rd., Lindfield, 2070.
VK2JG—N. S. Hill, 14/749 Pittwater Rd., Dee Why, 2098.
VK2OA—School of Applied Electricity, Sydney Technical College, Harris St., Ultimo, 2007.
VK2QA—N. M. Doyle, 43 Pine St., Randwick, 2031.
VK2BCD—L. D. Christolm, 86 Raglan St., Manly, 2095.
VK2BFE—J. F. Ellesmere, 80 Pringle Ave., Belrose, 2065.
VK2BGG—J. G. Griffiths, 10 Anne St., Wauchope, 2440.
VK2BKR—J. T. Kalopedis, 24 Walton St., Blakehurst, 2221.
VK2BLW—K. J. Watson, 6 Forier Ave., East Maitland, 2233.
VK2BSE—Australian Boy Scouts Association, 1st Epping Group, Station: 8 Essex St., Epping, 2121; Postal: P.O. Box 83, Epping, 2121.
VK2ZMG—A. S. Mitchell, "Arrawatta," Inverell, 2265.
VK2ZQJ—R. K. Graham, 13/818 Victoria Rd., Ryde, 2112.
VK2ZQR—R. C. Quick, Flat 4, 17 Kenrick St., The Junction, 2281.
VK2ZYL—B. J. Lacey, 1 Chapman St., Unanderra, 2526.
VK3CD—A. Campbell-Drury, 10 Colchester Dr., East Doncaster, 3109.
VK3JV—A. W. Adams, 46 Margate Cres., Glen Waverley, 3150.
VK3BAP—J. E. Kerr, 71 Watlie Gr., Springvale North, 3170.
VK3BAV—R. M. Bruce, (Recorded as VK3BAU in June-September List).

VK3BBG—R. A. Jones, 18 Morley Crt., Karungah, 3199.
VK3BBI—L. Brettalav, 48 Pennell Ave., St. Albans, 3021.
VK3BBN—R. P. Vize, 11 Mossman Dr., Heidelberg, 3064.
VK3BBP—H. J. Morere, 4 Plunket St., Brighton East, 3187.
VK3BBQ—R.A.E.M.E. Training Centre Amateur Radio Club, R.A.E.M.E. Training Centre, Bandiana, 3684.
VK3BCC—J. L. Vesle, 21 French St., Mt. Waverley, 3149.
VK3BCE—M. E. Morere (Mrs.), 4 Plunket St., Brighton East, 3187.
VK3BCK—L. C. Aiger, 55 Years Rd., Burwood, 3123.
VK3BCR—H. G. Austin, Quantong, Horsham, 3400.
VK3BCX—G. R. Minter, Kanumbra, 3715.
VK3BRF—P. Scherck, 11 Waverley St., Sandringham, 3191.
VK3YAI—P. Y. Harris, 1312 Centre Rd., Clayton, 3168.
VK3YAJ—L. G. Milne, 7 Alexander Ave., Morningside, 3521.
VK3YBK—G. W. Joffe, 20 Ludbrook Ave., South Caulfield, 3162.
VK3YBO—R. H. Wales, Samaric Roadside, via Benalla, 3672.
VK3YBP—T. J. Robinson, 52 Warrandyte Rd., Ringwood, 3134.
VK3YBQ—W. A. Wright, 16 Lincoln Dr., Cheltenham, 3192.
VK3YBR—R. N. Wall, 31 Hutton St., Dandenong, 3175.
VK3YBU—P. J. Cohen, 15 Cambro Rd., North Clayton, 3168.
VK3YBV—R. E. Jenkins, 493 Pascoe Vale Rd., Stretton, 3041.
VK3YBW—C. B. Wallace, 22 Norwood Rd., Caulfield North, 3161.
VK3YBX—D. M. Hunt, 341 Waterdale Rd., Heidelberg West, 3051.
VK3YBY—D. Andrews, 159 Princes H'way, Drouin, 3818.
VK3YCC—P. A. Wright, 245 Whitehall St., Yarraville, 3013.
VK3YCD—J. B. L. Emery, 5 Carmel Crt., Karingal, 3199.

VK3YCG—C. D. Beeforth, 10 Haig St., Mornah, 3021.
VK3YCH—M. C. Loxton, 5 Goldthorne Ave., East Kew, 3102.
VK3YCI—A. J. Jeffrey, 43 Millwa Ave., Chadstone, 3148.
VK3YCN—R. N. Elms, 18 Heritage Dr., Springvale, 3171.
VK3YCR—De Jong, 8 Collier Ave., Upwey, 3158.
VK3YCT—L. R. Johnston, Flat 9, 796 Warrigall Rd., Oakleigh, 3166.
VK3YCU—W. L. Rids, 40 Golf Rd., South Oakleigh, 3167.
VK3YCV—D. J. Bainbridge, Midland Motel, Mooroolbath, 3620.
VK3YCX—P. A. McGill, 22 Grace St., Laverton, 3028.
VK3ZFG—D. J. Bruce, 3 Shadwell St., Cheltenham, 3192.
VK3ZQC—N. K. Langmaid, 3 Narralan Ave., Yallourn, 3638.
VK4FQ—A. B. Foster, 6 Warren Crt., Aitkenvale, 4814.
VK4LP—E. Hanham, Station: 12 Burton St., Boonville, 4304; Postal: C/o Officers' Mess, R.A.A.F. Base, Amberley, 4305.
VK4MS—W. R. McLaughlin, Unit 2, Lucile Crt., 1 Sunrise Bvd., Surfers Paradise, 4217.
VK4JR—J. J. Hoare, 16 Wendover St., Grovely, 4054.
VK4UF—J. J. Fisher, 311 Ingham Rd., Garbutt, 4814.
VK4VF—S. L. Fittell, 78 Channon St., Gympie, 4570.
VK4ZAG—C. E. D'Alton, 30 Bayliss St., Toowoong, 4006.
VK5EJ—E. R. Dunkley, 9 Elva Ave., Poona, 5018.
VK5NZT—E. T. Schoell, 33 Avenue Rd., Highgate, 5053.
VK5SH—R. L. Mayfield, 35 Astrid Ave., Warraado, 5046.
VK5SO—C. F. Williams, 22 Laidlaw St., Henley Beach, 5022.
VK5ZFP—A. T. Parrell, 12 Warren Ave., Glenelg North, 5043.
VK5ZFS—R. E. Warrnett, 18 Cudmore St., Somerton Park, 5044.
(continued on page 23)

PREDICTION CHARTS FOR JUNE 1970

(Prediction Charts by courtesy of Ionospheric Prediction Service)



Overseas Magazine Review

Compiled by Syd Clark, VK3ASC

"CQ"

February 1970—

Meters. A Photographic Exposure, W6RPH. Words and music of D'Arsonval. **Souping up the Old Receiver.** Part 2, by W6PHH. More mods. to the old standard. **National HF Amplifier.** Should work with the other receivers and should work with the Australian AR7.

The Simplest TR Switch. W4CKP. Two back-to-back diodes.

A Sheet Metal Drill for Thin Materials. by VESQK. The standard point causes the drilling of a triangular or pentagonal hole. Such behaviour is prevented by using special points of the type recommended by this author. (A simpler method still is to use "P. & N." wood drill set $\frac{1}{8}$ "- $\frac{1}{4}$ " by 1/16th's, and Frost Engineering Co. make a special type drill for sheet metal.)

The Californian Kilowatt Syndrome. Sylvia Margolis. Humorous story of S.S.G.B. experiences with Bob Line, W4EJQ/G5AAM, who served in the S.A.F.

Delayed Switching for Transistor Receivers. VU2JN. Preventing front-end transistor burn out in an elegant manner.

A Sweep Audio Oscillator. VETBRK. The sweeper is a very handy tool be it for a.f. or r.f. use.

The Luxe 4053 Converter. VU2JN. Solid state seems to have solid advantages.

Receiver Signal Handling Capabilities. W2AEF. Part 2 of a very informative article on the finer points of receiver design.

Review, Drake TR6. W2AEF. Sideband for the ardent six metre man.

"OEHM"—The Oriental Ham Magazine

February 1970—

V58KH at the Festival. The story of how Ham Radio was shown to many who had never seen a station in operation. At the Festival of Hong Kong, 1969. Population 4 million. Amateur population 37.

Herts AGM. The story of activities at the Hong Kong Amateur Radio Transmitting Society annual general meeting, by Bob Pinkbeiner.

Linear Amplifiers. KR6JT. A theoretical discussion of the various types. Advantages and disadvantages of each type are discussed.

The Name of the Game. HS3DR. A humorous dissertation of cycles versus Hertz.

Sound List. What and Why, HS3AL. Seems that some of the so called "Ham activity" emanates from people other than licensed amateurs.

"RADIO COMMUNICATION"

February 1970—

Top Band to Ten Transmitter. GH3VA. A transmitter which takes the practice of v.t.v. supposition about as far as it is possible and describes a transmitter, using valves, which is as r.f. tight as can be achieved. Some very ingenious harmonic filtering and suppression techniques are discussed.

A Self Contained Linear Amplifier for 144 MHz. 26127. A straight forward practical design using a 4CX250B or similar tube.

Two Metre MOSFET Converter. G3HRW. Some comments enlarging upon the remedies to various noise encountered by builders of a unit described in the June 1969 issue of "Radio Communication".

Technical "Eighties". Anonymous. Written in somewhat satirical vein. This is an article for complacent members and non-members of national societies.

Technical Topics. G3VA. Pat Hawker this month discusses his usual wide range of subjects. Variable bandwidth filters, a.s.b. generation with CA3090, a.s.b. static protection, Colpitts overtone oscillator, low voltage square wave generator, frequency divider oscillator and ultrasonic cleaning. These are then followed by a resume of the characteristics of the new Marconi H2900 series high-performance receiver and finally slow scan DX 1.v.

"RADIO RIVISTA"

"Radio Rivista" is an attractively printed monthly "Ham" Journal from the Italian A.R.I. (Italian Radio-Technical Association). It contains set-up and content to our own "Amateur Radio".

Articles and comment come from Amateurs living in all parts of Italy and the advertisements display the well known American and English Amateur rigs, as well as those of Italian manufacture.

Altogether a lively, go-ahead Amateur magazine with plenty of information of interest to Amateurs generally.

January 1970—

A very good construction of 112V describing the design and construction of a very sound final amplifier using two 813s in grounded grid. Well worth looking up if you are seeking a good design for a final, as the circuit diagrams, sketches and photographs make everything clear, even if one cannot read technical Italian.

From IIGU and IIMY comes a full description of their equipment for receiving satellite-produced photographs of the earth's surface. It gives due credit to "QST" authors K2RNF and W4MKM, whose articles it supplements.

Reminiscences of I.I. notes on measurements of antenna impedance and other snippets are worthwhile. (Review by VK3AHR)

"RADIO ZS"

February 1970—

The Pi Coupler. ZSSHF. An old subject which is still of vital interest to the active Amateur.

Joe, VK4AT. Reprinted from "A.R." December 1969. Joe gets around. **Instant VFO.** ZL2AMJ. Reprinted from "Break-In". The familiar Clap circuit in a new guise, as a FET circuit, as a source follower for isolation. Should be useful to VKs.

"SHORTWAVE MAGAZINE"

February 1970—

Design and construction of a Low Pass Filter. G6HL. -60 dB or better on all frequencies above 40 MHz. with a 100 dB. deep null at about 45 MHz.

The Linear Amplifier Stage in S.S.B. Working. G3KFE. Using t.v. line output valves, cooling and ventilation, loading and full output. EL302, 6CE5, EL500, 6CE5, 6HF5, 6J56, 6KD6 and 6LQ5 are discussed.

Another Top Band Aerial Layout. G3NBP. Fitting the long aerial on the short block.

Explaining Binary Code. G3UGK. Straight and binary coded decimal.

VFO Control on Two Metres. G3YUA. Discusses practical design.

Solid State Crystal Switching. G3YUA. High Impedance R.F. Probe, G3WPT. MW Car Radio as I.F./A.F. Amplifier, G6BQH.

Another Break-In System. G3TIE. The objects of the system are set out and then a practical solution is proposed using diodes and two relays. Reasons for choosing the devices which are employed are given.

"THE INDIAN RADIO AMATEUR"

December 1969—

Sushil's 1969 Special. VU2KK. A c.w./a.s.b. transmitter for four bands is described. Filter on 8 MHz. and v.f.o. covering 6-7 MHz. Uses valves.

For the Juniors. The Electrical Circuit. D.C. VU2CC. A part of I.R.A.'s course in fundamentals.

Then follows a directory of 'Indigenous Communications' listing the components made by seven Indian firms in various parts of the country.

"V.H.F. COMMUNICATIONS"

February 1970—

This publication, which is well known to many of the v.h.f./u.h.f. fraternity, is published by DJ2QC at Erlangen, W. Germany. For distribution throughout English speaking countries, an English language edition is published each month and it is this version which is available to VKs. The stated objects of the publication is to cater for the needs of Radio Amateurs "especially covering v.h.f., u.h.f. and microwaves". Our copy, by courtesy of Paul B. Jackson, 37 Miners Rd., Bayview, N.S.W., 2104, to whom subscriptions may be sent.

A S.S.B. Transceiver with Silicon Transistor Complement, DL0HA. Part 1 of a series. The 144 MHz. converter with dual gate MOSFET mixer.

A Tiltable Antenna with Selectable Polarity. DJ2PT. Perhaps a more appropriate English expression would be "Selectable Polarisation". For that is what the author is talking about. This type of antenna is useful for a number of circumstances including satellite work.

Is F.M. Advantageous on the V.H.F./U.H.F. Bands? DJ4BG. Pro and con arguments in favour of the various operating modes available to Amateurs.

Frequency Modulation of Crystal-Controlled Oscillators by use of Resistor Diodes. DM2AWD. No moving parts.

Narrow Band Frequency Modulation of Over-tone Crystal Oscillators. OESTH.

A 48 MHz. VFO for 144 MHz. Transmitters. DM2MY. A simply constructed device which permits the 144 MHz. man to wander across the band at will.

Calibration Spectrum Generator for Two Metres. DL2XX. A v.f.o. type unit providing spectra at 1.60 MHz. intervals for use on the 144 MHz. band.

Modulation of the DJ29Z 961 SW. S.S.B. Transmitter. DJ2EX. One Amateur suggests improvements to another's design.

A Calibration Spectrum Generator for Two Metres. DL2XX. A v.f.o. type unit providing version of the valve thing, providing signals at 1 MHz. intervals up through the v.h.f. bands. **Simple Compact P. Stages for Two Metres.** DJ4RX. Some up-to-date theory.

An I.F. Diplexer for 28-30 MHz. DJ3JT. This device was designed to enable a number of receivers to be connected to a single v.h.f. converter. It provides six isolated outputs from the one input.

Cascaded I.F. Stages. DJ4BG. Another use for the R.C.A. CA305 and CA3028 integrated circuits.

Technical articles in "V.H.F. Communications" were written and concise with clear diagrams and photographs. Australian Amateurs should find much to interest them in this journal and find it well worth a subscription. A great deal of information is packed into its sixty octavo pages.

NEW CALL SIGNS

(continued from page 22)

V6KJW—J. Vogel, 816 Koombas St., Port Hedland, 6721.

V6KPM—D. P. Murphy, 142 Broun Ave., Emu, 6052.

V6KIC—W. E. Dixon, Station: Portable; Postal: C/O. Officers' Mess, R.A.A.F., 3622 Pearce, 6004.

V6KZDW—J. W. Wauchoppe, 68 Murchison St., Shenton Park, 6008.

V6KZD—J. T. Kelly-Hart, 838 Sandy Bay Rd., Lower Sandy Bay, 7005.

CANCELLATIONS

VK1SW—S. D. Wheeler. Deceased.

VK2EE—J. L. Llewellyn. Not renewed.

VK2EE—T. J. Jones. Not renewed.

VK2GJ—School of Applied Electricity. Now VK3QAO.

VK2NO—G. Hallam. Transferred to T.P.-N.G.

VK2OA—N. S. Hill. Now VK2JG.

VK2AIY—P. B. Parry. Transferred to Vic.

VK2ALF—J. H. Haines. Not renewed.

VK2AVV—Penrith High School Radio Club. Not renewed.

VK2AZ—B. D. Woods. Not renewed.

VK2BA—E. D. Nielsen. Not renewed.

VK2BHG—M. A. Harrison. Not renewed.

VK2BPC—P. J. Corbett. Not renewed.

VK2BM—B. E. Bromberg. Not renewed.

VK2ZCO—B. J. Hilbert. Not renewed.

VK2ZFN—N. Flori. Not renewed.

VK2ZL—T. Kalopoda. Now VK2BKR.

VK2ZKW—K. Watson. Now VK2BLV.

VK2ZNN—J. P. Carmody. Not renewed.

VK2ZOH—O. L. Holmwood. Not renewed.

VK2ZLH—J. H. Haines. Not renewed.

VK2ZCG—G. V. Cooley. Not renewed.

VK2ZSB—R. C. Graham. Now VK2ZQJ.

VK2ZLH—K. Watson. Not renewed.

VK3AAM—J. McDonald. Transferred to Qld.

VK3AOU—J. A. Boell. Not renewed.

VK3APL—A. Campbell-Drury. Now VK3CD.

VK3ATC—T. N. Whitfield. Transferred to E.

VK3AZZ—R. J. Gray. Transferred to N.G.

VK3ZJ—E. Brown-Sarre. Transferred to N.S.W.

VK3ZZJ—E. Westernman. Not renewed.

VK4AX—H. R. Denby. Not renewed.

VK4E—J. E. Schell. Not renewed.

VK4GM—A. F. Jacobsen. Transferred to W.A.

VK4PF—F. R. Parker. Not renewed.

VK4QJ—J. E. Schell. Transferred to S.A.

VK4WL—W. Robertson. Transferred to N.S.W.

VK4ZHO—R. J. Hoare. Now VK4RJ.

VK5DZ—M. J. Groth. Transferred to T.P.N.G.

VK5E—J. E. Schell. Not renewed.

VK5EA—B. A. Foster. Now VK4FQ.

VK5IH—E. Hanham. Now VK4LP.

VK5J—J. E. Schell. Transferred to Qld.

VK5ZBL—R. L. Mayfield. Now VK5GH.

VK5ZJ—J. E. R. Dunkley. Now VK5JE.

VK5ZTS—J. E. Schell. Now VK5N2.

VK6BX—J. V. Hambley. Transferred to Vic.

VK6KN—R. W. Jones. Transferred to S.A.

VK6CIA—J. T. Kelly-Hart. Transferred to Tas.

VK6J—J. E. Schell. Not renewed.

VK7PA—A. E. Allen. Deceased.

VK ACTIVITY ON 160 METRES, CHECKED IN VK6

The following table is an analysis of VK calls heard on 160 metres for 1968 and 1969, showing monthly figures. The number of daily checks in 1968 was 256, and in 1969 was 233. All calls were counted once only on any one date.

| Activity on 89 days | | | | | | | | | |
|---------------------|-----|-----|-----|-----|-----|-----|-----|--|--|
| | VK2 | VK3 | VK4 | VK5 | VK6 | VK7 | VK9 | | |
| Jan. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| Feb. | 0 | 0 | 0 | 0 | 1 | 0 | 0 | | |
| Mar. | 0 | 2 | 0 | 0 | 0 | 0 | 0 | | |
| Apr. | 0 | 14 | 0 | 3 | 0 | 4 | 1 | | |
| May | 0 | 14 | 0 | 1 | 2 | 6 | 1 | | |
| Jun. | 0 | 1 | 0 | 4 | 13 | 1 | 1 | | |
| Jul. | 1 | 3 | 0 | 13 | 3 | 1 | 0 | | |
| Aug. | 0 | 8 | 0 | 3 | 0 | 0 | 0 | | |
| Sep. | 0 | 27 | 0 | 1 | 0 | 0 | 0 | | |
| Oct. | 0 | 12 | 0 | 1 | 9 | 1 | 0 | | |
| Nov. | 0 | 2 | 0 | 0 | 6 | 0 | 0 | | |
| Dec. | 0 | 1 | 0 | 0 | 4 | 0 | 0 | | |
| Totals | 1 | 73 | 0 | 31 | 51 | 10 | 1 | | |

| Activity on 102 days | | | | | | | | | |
|----------------------|-----|-----|-----|-----|-----|-----|-----|--|--|
| | VK2 | VK3 | VK4 | VK5 | VK6 | VK7 | VK9 | | |
| Jan. | 0 | 9 | 0 | 5 | 0 | 0 | 0 | | |
| Feb. | 0 | 1 | 0 | 3 | 0 | 0 | 0 | | |
| Mar. | 0 | 0 | 3 | 0 | 0 | 0 | 0 | | |
| Apr. | 0 | 14 | 0 | 2 | 6 | 1 | 0 | | |
| May | 0 | 9 | 0 | 1 | 4 | 1 | 0 | | |
| Jun. | 2 | 11 | 0 | 2 | 0 | 0 | 0 | | |
| Jul. | 4 | 4 | 0 | 0 | 0 | 0 | 0 | | |
| Aug. | 1 | 17 | 1 | 10 | 4 | 1 | 0 | | |
| Sep. | 1 | 38 | 0 | 16 | 19 | 0 | 0 | | |
| Oct. | 0 | 19 | 0 | 4 | 7 | 0 | 0 | | |
| Nov. | 0 | 0 | 0 | 0 | 2 | 0 | 0 | | |
| Dec. | 0 | 0 | 0 | 0 | 10 | 0 | 0 | | |
| Totals | 4 | 122 | 4 | 44 | 52 | 4 | 0 | | |

The following separate calls were logged in the above:

W.I.A. D.X.C.C.

Listed below are the highest twelve members in each section. Position in the list is determined by the first number shown. The first number represents the participant's total countries less any credits given for deleted countries. The second number shown represents the total D.X.C.C. credits given, including deleted countries. Where totals are the same, listings will be alphabetical by call sign.

Credits for new members and those whose totals have been amended are also shown.

PHONE

| | | | |
|--------|---------|--------|---------|
| VK5MS | 314/340 | VK5AB | 297/314 |
| VK6RU | 314/339 | VK4KS | 293/308 |
| VK3AHQ | 311/326 | VK4FJ | 287/307 |
| VK4HR | 310/328 | VK3ARX | 286/288 |
| VK4JR | 307/325 | VK2APK | 277/283 |
| VK6MK | 303/323 | VK3TL | 271/277 |

New Members:

| | | |
|-----------|-------|---------|
| Cert. No. | Call | Total |
| 108 | VK2KY | 108/108 |
| 109 | VK2KK | 101/101 |

Amendments:

| | | | |
|--------|---------|-------|---------|
| VK3SE | 244/247 | VK3UW | 201/202 |
| VK4UC | 217/217 | VK3SM | 189/193 |
| VK3AMK | 216/216 | VK4RF | 169/169 |

C.W.

| | | | |
|--------|---------|--------|---------|
| VK3AHQ | 301/315 | VK2APK | 274/282 |
| VK3QL | 300/323 | VK3NC | 274/280 |
| VK4FJ | 290/313 | VK3XB | 270/287 |
| VK4HR | 287/308 | VK3ARX | 270/278 |
| VK3AGH | 282/296 | VK6RU | 266/289 |
| VK3YL | 275/292 | VK4TY | 259/272 |

Amendments:

| | | | |
|-------|---------|-------|---------|
| VK4RF | 152/164 | VK4KS | 132/138 |
|-------|---------|-------|---------|

OPEN

| | | | |
|--------|---------|--------|---------|
| VK6RU | 315/340 | VK6MK | 304/324 |
| VK4HR | 314/339 | VK3EO | 302/323 |
| VK3AHQ | 312/338 | VK4FJ | 298/322 |
| VK2VN | 308/325 | VK3ARX | 295/304 |
| VK4SD | 306/321 | VK2APK | 294/305 |
| VK4TY | 306/321 | VK4KS | 294/313 |

New Member:

| | | |
|-----------|-------|-------|
| Cert. No. | Call | Total |
| 123 | VK4QS | 100 |

Amendments:

| | | | |
|-------|---------|-------|---------|
| VK3NC | 275/275 | VK4RF | 219/231 |
| VK4UC | 258/259 | VK3HE | 196/197 |

1968: VK2BGH; VK3s ABR, ACH, APE, APN, ATN, ED, GR, GU, NW, RJ, RZ, TB, XB, XJ; VK5s BS, KQ, LQ, RQ; VK6s AI, CW, IZ, NK, ZW; VK7M; VK9GN.
1969: VK2s AKL, BF; VK3s ABR, ACA, ACH, APV, AKN, AMA, AML, APA, APN, AQ, ARL, ATN, ATN, AU, AXL, AVI, AZU, CV, GU, KP, KS, NW, RJ, TB, XB; VK4AH; VK5s BS, FM, GL, JQ, KG, KO, LP, RO; VK6s AI, CW, NK, ZW; VK7M; VK9GN.
—George Allen, WIA-16042.

MUNICH OLYMPIC DIPLOMA (M.O.D.)

The D.A.R.C. "Orisvarebands" of the Olympic City of 1972 invite all Radio Amateurs of the world to participate in the Amateur Radio friendship activity of the Olympic Games 1972. The Munich Olympic Diploma is established for this purpose. The requirements are:

1. All contacts with stations in Munich, from last January 1970, 0000 GMT, to 2400 GMT of the day of the official closing of the Olympic Games 1972, will count for the award.

2. For the purpose of this award, all stations located in the "DOK" C-09, C-11, C-12, C-13, C-18 or C-30 are considered as Munich stations.

3. Contacts with Munich stations are credited the following points:

German participants, Phone 2 pts., C.w. 4 pts.
Other Europeans, according to WAE list: Phone 4 pts., C.w. 8 pts.
Participants outside Europe: Phone 6 pts., C.w. 12 pts.

The same station may be worked once per band and once per calendar year for the award.

4. The M.O.D. will be issued separately for a.c. phone and mixed. Operation of the award is possible on any single band and this will be endorsed accordingly. At least the following minimum points are required for each class:

Class I. (Gold), 250 points.
Class II. (Silver), 200 points.
Class III. (Bronze), 100 points.

5. Contacts may be made on 150, 80, 40, 20, 15 and 10 metre bands.
6. The M.O.D. is available also to S.w.'s as above.

7. Special requirements are issued separately for the Munich stations.

8. Fees: U.S. \$1.00, DM 4, or 16 IRCs.
9. Address for the application: Engelbert Mieser, DJ8ZU, D8 Munich 13, West Germany, Keulstr. 6.

Only a list of the QSO details is required. This list must have been checked against the received QSL cards, and certified by two other licensed Amateurs. The QSLs may be called in for inspection by the Award Custodian. QSLs to the Munich stations worked must also have been received in Munich before the issue of the award.

AUSTRALIAN V.H.F./U.H.F. RECORDS

| | |
|------------|---|
| 50/52 MHz: | VK3ALZ to XE1FU, 1/5/59, 8418 miles. |
| 144 MHz: | VK3BC to ZL2HP, 23/12/55, 1957 miles. |
| 432 MHz: | VK3ALZ to VK5ZDR, 28/5/58, 402 miles. |
| 576 MHz: | VK5ZL/5 to VK5QZ/5, 28/12/59, 195 miles. |
| 1296 MHz: | VK3ZKB to VKTWF, 6/2/70, 325 miles. |
| 2300 MHz: | VK3XA to VK3ANW, 18/2/50, 9.0 miles. |
| 3300 MHz: | VK3ZGT to VK3ZDQ/3, 14/12/63, 63.5 miles. |

Australian E.M.E. Record

| | |
|----------|--|
| 144 MHz: | VK3ATN to KIMWA/2, 28/11/56, 16.417 miles. |
|----------|--|

Australian A.T.V. Record

| | |
|----------|--|
| 432 MHz: | VK5AO/T/P to VK5ZEF/T/P, on 16/2/59, 93 miles. |
|----------|--|

† N.B.—The records shown for 432 and 1296 MHz are currently subject to superior claims which are being processed. Results will be published when available.



PROVISIONAL SUNSPOT NUMBERS

FEBRUARY 1970

Dependent on observations at Zurich Observatory and its stations in Locarno and Arosa.

| Day | R | Day | R |
|-----|-----|-----|-----|
| 1 | 154 | 15 | 115 |
| 2 | 120 | 16 | 139 |
| 3 | 79 | 17 | 142 |
| 4 | 68 | 18 | 143 |
| 5 | 77 | 19 | 120 |
| 6 | 100 | 20 | 125 |
| 7 | 107 | 21 | 128 |
| 8 | 97 | 22 | 125 |
| 9 | 123 | 23 | 164 |
| 10 | 133 | 24 | 166 |
| 11 | 175 | 25 | 173 |
| 12 | 153 | 26 | 143 |
| 13 | 145 | 27 | 150 |
| 14 | 124 | 28 | 146 |

Mean equals 129.4.

Predictions of the Smoothed Monthly Sunspot Numbers

| | |
|----------|-----------|
| March 84 | June 90 |
| April 85 | July 87 |
| May 91 | August 87 |

—Swiss Federal Observatory, Zurich.

K.W. ELECTRONICS KW2000B TRANSCEIVER

COVERS 10 TO 160 METRES



- ★ Six-band operation.
- ★ Lift-up inspection lid.
- ★ Two-speed V.F.D. tuning.
- ★ Mechanical Filter provides pass-band for SSB.
- ★ No external antenna switching required.
- ★ Independent transmit and receive frequencies or true transceive operation.

- ★ 180 Watts P.E.P.
- ★ Matching AC power supply with built-in speaker.
- ★ Side Tone Monitor for CW.
- ★ Crystal controlled Receiver first mixer.
- ★ Output Impedance adjustable.
- ★ Easy to install in a vehicle for mobile operation.
- ★ Lightweight, attractive, robust and efficient.

Write for Technical Leaflet

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VK3 ADVISORY COMMITTEE

The Victorian Advisory Committee for the ensuing 12 months is comprised of:-

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Mr. P. O'Dwyer
Mr. R. A. C. Anderson
Mr. L. Jackson
Mr. M. Davis.

FEDERAL AWARDS

COOK BI-CENTENARY AWARD

The following additional stations have qualified for the Award:-

| Cert. No. | Call | Cert. No. | Call | Cert. No. | Call |
|------------|------------|------------|------|-----------|------|
| 154 AX3HB | 202 VBAAV | 221 KGAGQG | | | |
| 185 AX3XM | 202 WBRB | 222 ZSDP | | | |
| 186 V86DA | 204 GJLHJ | 223 YV1PF | | | |
| 187 AX4FJ | 205 KHAQV | 224 WABOXK | | | |
| 188 W2P | 205 V2TVP | 225 V2TVP | | | |
| 189 Z56LW | 207 VETBCI | 226 W7PFO | | | |
| 190 W3GCS | 208 K4BEF | 227 ZL1BDN | | | |
| 191 VEGGCO | 223 AS6KX | 228 AX3FJ | | | |
| 192 W3K | 210 AX4XG | 229 CL1W | | | |
| 193 V23BF | 211 AX2ADJ | 230 W8KDD | | | |
| 194 J2REDG | 212 11CGM | 231 WAF6QL | | | |
| 195 WATFR | 213 W8BFA | 232 VES | | | |
| 196 AX2AXI | 214 W8BAP | 233 11AJ | | | |
| 197 VO1E | 215 W8DA | 234 W2D0D | | | |
| 198 AX2AAR | 215 VEG3NM | 235 G3RWBQ | | | |
| 199 AX3BWF | 217 AX9WD | 236 AX3AJX | | | |
| 200 Z56ACK | 218 W2TP | 237 AX4JI | | | |
| 201 V8BAP | 219 AX6TG | 238 Z5ARN | | | |
| | 220 AX2VQ | | | | |

W.I.A. V.B.F.C.C.

New Members:

| Cert. No. | Call | Confirmations |
|-----------|--------|---------------|
| 73 | VK3AMK | 144 |
| 74 | VK3AUN | 100 |

D.X.C.C.

Addition to the Australian DX Century Club Countries List:

QO—Market Reef.
Contacts made on or after 27/12/69 may be counted for D.X.C.C. purposes.
Market Reef is an island located exactly on the boundary line between Finland and Sweden and directly opposite the Aland Islands.

URUNGA CONVENTION

The 22nd Radio Convention was held at Urunga over the Easter week-end, with an attendance of about one hundred. It was most gratifying to the organisers that so many did attend this Convention as the founder and originator of the Urunga Convention, Crief Retalick, VK2XO, had passed away during the year. Discussions with his son and daughter indicated that they wished to see the Convention continued, and this year it was called the Crief Retalick Memorial Year.

There were three 144 transmitter hunts and a 7 MHz. hunt, with the usual Urunga Scramble. A trade display was arranged and VK2AHH took along his Hammond organ to provide entertainment.



Minimum \$1 for forty words.
Extra words, 3 cents each.

HAMADS WILL NOT BE PUBLISHED UNLESS ACCOMPANIED BY REMITTANCE.

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EXCHANGE: Creed Teletypers for modern Commodore Receiver, One Model 7 Page Printer; one Model 470 Type Printer and Sender; one Model 7 Page Printer for working; one home-brew terminal unit; rolls of tape and paper. Ring Leo Fowler, VK3ZGF, 25-260 (Melb.).

FOR SALE: AR8BD Receiver, product detector, hand-book, spare tubes, excellent condition, being used on 8 and 2 metres at present, will crate and freight anywhere, \$100. Hilo Universal Modulation Transformer with chart, \$10. V4KZJT, 23 Esplanade, Pielke, Ohio, 4665.

FOR SALE: Drake 28, 80-40-20-15 and full 10 mhz band, 80 ohm co-ax cable 66 ft., speaker, headphones with rubber sheath, two, two extra xtal. \$250. Sec. Code Practice 3-way Oscillator (Model 150), \$10. Junker Key (open), \$10. Tech Treadler Model TE15, 0.44 to 280 MHz., \$20. Electro 12-hour digital \$15. W. Meier, 3 Oxford Street, Oakleigh, Vic.

FOR SALE: Galaxy 3 Transceiver, excellent performance, good condition, complete with matching power supply and speaker, crystal calibrator and v.o.x., handbook, \$310 or reasonable near offer. Phone 560-9845 (Melb.), VK3QW, 26 Almar Rd., Glen Waverley, Vic., 3150.

FOR SALE: Hallicrafters SR-400 Transceiver with USB-LSB-CW, 200 Hz. CW filter, VOX, PTT, receiver increments tuning, 100 kHz. bands. Hallicrafters VFO, etc. Drake ZC Receiver, 3.5-30 MHz., Ham bands plus broadcast bands, speaker, noise limiter, 0 multiplier, 100 kHz. bands. Hallicrafters VFO, etc. Drake ZC Receiver, 3.5-144 MHz. CW, 3.5-30 MHz. 100 kHz. Calibrator. Saba, Transceiver radio, a.m. f.m., 25m-46m, bands, 6v, 240V. All equipment in excellent guarantee working condition. see H. Schoning, P.O. 382, Sydney, N.S.W., 2001. Phone 682-0333 Ext. 318.

FOR SALE: Heathkit SB100 Transceiver with power supply, handbook and Kyoritsu SWR meter, \$350 cash, no offers. 9 Faunce Crescent, O'Connor, A.C.T., 2601.

FOR SALE: Lafayette Model HAS50 Receiver with manual, new, new, \$175. Geloso Transmitter, G22-T, \$100. Lafayette Transistor AM/FM, \$125. Multimeter Model 20H, \$10. Kyoritsu SWR Meter, Model K-100, \$20. Sansel Miniature Transistorised Test Oscillator, Model TO-3A, \$12. Box assorted Valve and Valve Tester, \$10. Multimeter, 9 Fitzpatrick St., Warronea, N.S.W.

FOR SALE: No. 10 Crystal Calibrator, as new, with 100 kHz. scale, similar to No. 10, \$10. A.W.A. Crystal Calibrator, Type 1A039, with d.c. p.s., output 50-1000 kHz., \$12. Signal Generator, Type 1-132, 100-1500 kHz., with in-built 500 p.p.s., \$10. Beyer Disc Recorder, Type RD, 35-45 r.p.m., with recording amp., playback, p.u. level meter, three speed cutting stylus (2 micro), and alternative cutting recording gear, \$40. Collaro "Studio" 3-speed Tape Deck, in original carton, new, unused, \$25. "Glydon" TV Tuning Unit, long shafts, new, unused, less valves \$247. 58L8, \$4. TV Power Transformer, 280-0-280 x 250 mA., two 6.3v. at 4 amp., one 5v. at 3 amp., new, unused, heavy duty type, \$5. Valve, CV788 (832), suit 520 tx, new, \$2. Crystals, 435 KHz. Filter Crystal (1), RC AUS, \$2. 7353 KHz. Type CRIA-AR (1), 50c each; 7370 KHz. Type CRIA-AR (2), 50c each; 7370 KHz. Type CRIA-AR (3), 50c each. The above suitable for converter service. Phone (Melb.) 52-7745, E. Mantford, VK3EM.

FOR SALE: Modified 522 Transceiver, complete with power supply, front panel finished in grey hammett, rx has FET pre-amp., b.f.o., n.i., S meter, tuning range 144 to 145.3 MHz. Tx modulator V85 p.p.s. to 522 final. P.I.T. operation. Price \$80 or nearest offer, Contact VK3YBO, R. Wales, Samaria Roadside, via Benalla, Vic., 3672.

FOR SALE: Yaesu FT-DX-100 with speaker and Hamcat Mobile Whip. Perfect condition and under guarantee, \$500. Star Communications Receiver with matching speaker, cost \$470, sell \$260. Ian Annet, VK3BBA, Stanhope, Vic., 3623. Phone 205 any time.

WANTED: A Communications Rx covering approx. 900 KHz. to 30 MHz. Suitable for SWL. Write with particulars to John Douglass (AX3YC), 4 Brodie St., Bendigo, Vic., 3550.

WANTED: Command Transmitter and Receiver in good condition. Also Creed or Teletype Tape Recorder. Fred Ryan, VK1RY, P.O. Box 43, Canberra, A.C.T., 2600. Phone 471-8899.

WANTED: Following Geloso components: Amplifier Band Receiver Front-End, Type 262A; C. Coupler, Type 262B; 32/144 MHz. Tuning Unit, Type 262C; N771; 23/209 P.F. Tuning Capacitor, Type N774; VFO, Type 146L, Malcolm Sinclair, VK2BMS, 52 Fourth Ave., Willoughby, N.S.W., 2068. Telephone (Sydney) 55-2362.

WANTED: One of the following 1/2 kw. O.G. Spark Tuning Unit, 144 MHz. Type 241C, \$40. 300, 500, 355, 355F. Radio Communication Co. types P57, T20, T24, T22, T29, or similar small home-brew equipment. Also quenched plate gap dischargers; vacuum tube condensers such as Adams high voltage pattern 5001 rating 0.0044 uF, 20,000 volt test, R. F. Fisher, VK3BAQ, 241 Royal Pde., Parkville, Victoria, 3052.

WANTED: Single or Dual Channel Continuous Chart Recorder. Min. Chart width 1 inch, with Chart scale about 1 inch/row. Will consider almost anything. VK0D5, 6 Christy St., Triggs, W.A., 6020.

WANTED: 20 Mx SSB/CW Monoband Transceiver— or Duobander. Electronic Keyer and SWR Unit. Also Pre-1935 gear, parts or complete units. Write Al. Brown, VK4GS 35 Rhyndot St., West End, Brisbane, Qld. 4-6525.

W.I.A. QUEENSLAND DIVISION

STATE CONVENTION

will be held on

13th and 14th JUNE, 1970

at

SANDGATE, QLD.

The venue for the Convention is the R.S.L. Memorial Club Hall, in Keogh Street.

Registration Fees: Amateurs and Listeners, \$3.50; XYLs and Friends, \$2.50; Children (under 12), \$1.50. The fee will include Saturday night dinner and entertainment. Registrations may be sent to the Convention Organiser, Mr. Bill Flannery, VK4XO, 71 Wishart Rd., Mt. Gravatt, Brisbane, Qld., 4122.

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- Range 4—27 - 46 MHz.

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1 part in 10^5 /°C. (crystal controlled).

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Selectivity: Wide—200 KHz.
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Alternative crystal filters can be fitted to special order.

Deviation acceptance: 75 KHz.

Crystal calibrator: 10 MHz. markers.

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Crystal calibrator: 50 MHz. markers.

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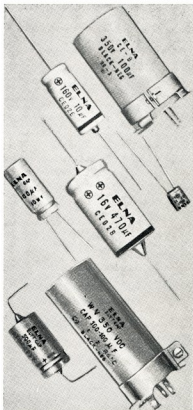
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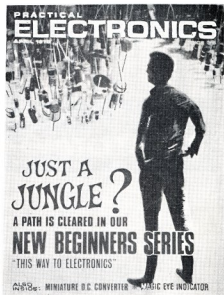
This widely-read magazine from England offers the do-it-yourself enthusiast an amazing variety of advanced ideas. The April issue has just arrived — read about miniature converters for cars and boats, coherent pulsed radar, demo switching circuits. These are just a few of the live-wire features in the issue Practical Electronics now on sale.

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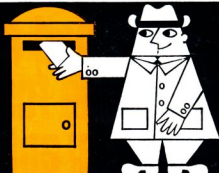
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